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DOMESTIC ENGINEERING

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PUBLISHED AT
1900 PRAIRIE AVENUE
CHICAGO

Government Aids Building

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U. S. Loans Near Peak

ederal Program urs Money Into onstruction—Big ashington Plant st now Completed

Backs Up lumbing Laws

resident Calnan rges Plumbers to ork for Better aws to Prevent ore Epidemics

TOMATIC HEAT AND AIR
ONDITIONING SECTION—
PAGE 45

JULY
1934

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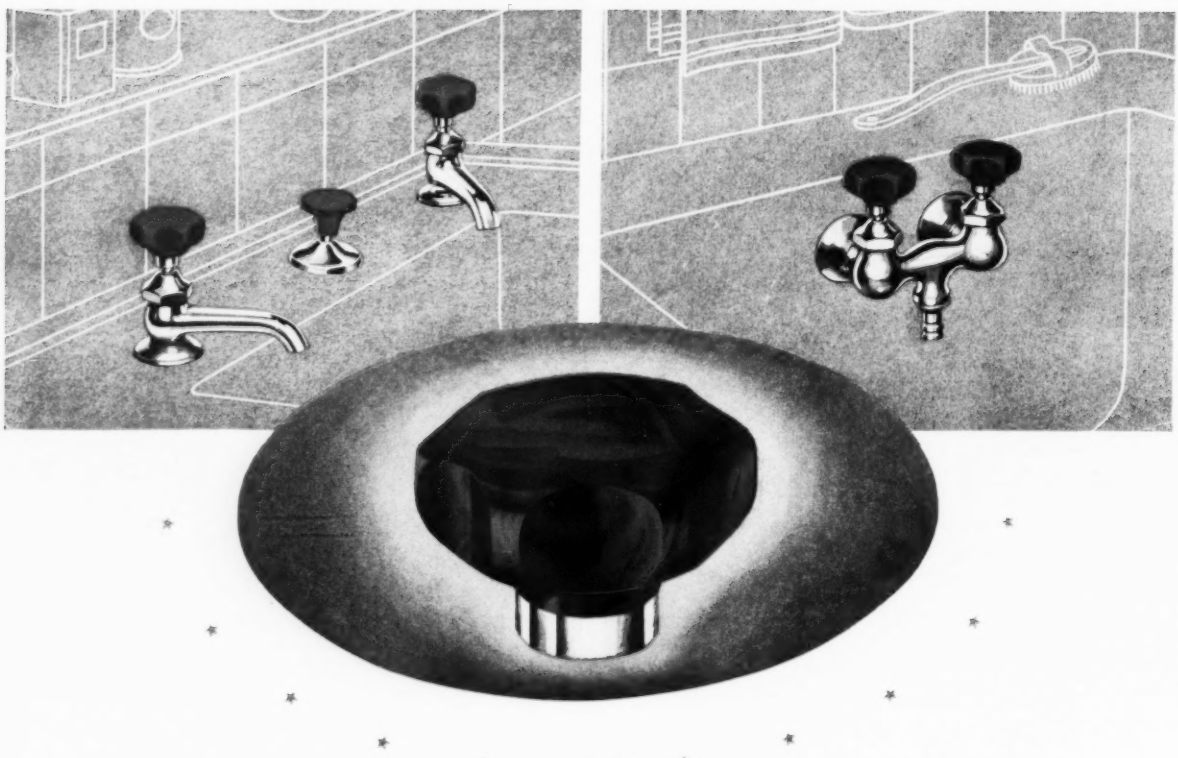
144

BEING CONSTRUCTED BY
U.S. TREASURY DEPARTMENT
OFFICE OF SUPERVISING ARCHITECT

Plumbing & Heating Contracting and Merchandising

and now *A dressed-up bathroom* at not one cent extra cost!



INTRODUCING Fisher Fixtures with handles in colors . . . cool, beautiful colors that will transform a dull, drab bath into a charming, cheerful room that fairly sparkles.

Different? Emphatically yes! Attractive? We'll leave that to you, or to any one of your customers! Durable? As chromium plated brass! These Catalin handles will not chip, break or discolor and will last the life of the fixture.

Here are beautiful new Fisher Fixtures that *cost no more* than an ordinary Bath or Lavatory Faucet. Why not order yours now?

Write for prices and complete details.

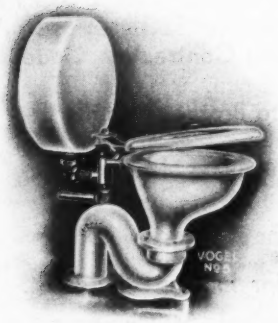
Optional Colors . . . Blue, Green, Ivory, Onyx, Yellow, Rose Quartz

Fisher • Brass • Inc.

MARYSVILLE, OHIO

New York Office and Warehouse 442 West 49th St.

TOILET ROOMS IN INDUSTRIAL PLANTS ARE BEING MODERNIZED



Vogel Number Five—Enameled flushing rim hopper with S trap, enameled inside only, reinforced hardwood seat, heavy brass flush valve, pressure tank, union ell flush connection. Outfits furnished with flanged S trap, one-half S, three-quarters S, or S trap for caulking.

★

Go after this business!

Business is improving in all the industries. Toilet room facilities, which for years have needed modernizing are now receiving attention. We know this to be absolutely true from inquiries which we are receiving.

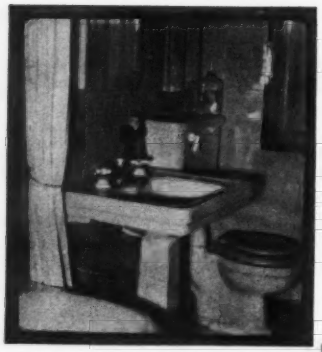
There is no finer outfit for industrial plants than the Vogel Number Five. It is sturdy, and like all other Vogel closets, its mechanism is simple—no balls or floats to leak—nothing to get out of order.

Our Number One frost-proof valve can be used in connection with this bowl making the outfit semi-frost-proof.

Use Vogel direct-by-mail literature to get your share of this industrial business. Let us know how much you need—imprinted with your name and address.

JOSEPH A. VOGEL COMPANY
Wilmington, Delaware St. Louis, Mo.

VOGEL PATENTED Products



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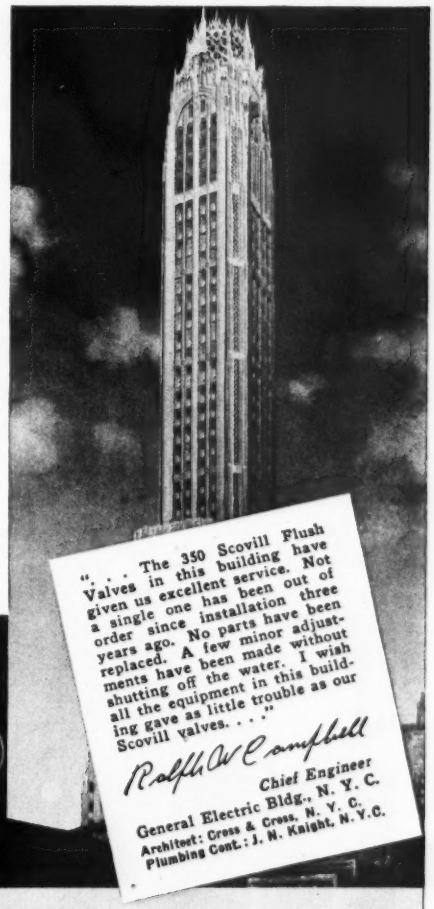
This service record will help you sell Scovill Flush Valves

HERE'S the three-year history of a thousand Scovill Flush Valves—a perfect service record told by the building engineeers in charge. Such records—typical of Scovill installations—are unbeatable sales arguments for the man who sells Scovill equipment.

You can guarantee the Scovill Flush Valve for long, hard service, for economical freedom from repairs. A self-cleaning by-pass prevents clogging. *Outside* regulation eliminates the inconvenience of water shut-offs. And the exclusive self-lubricating feature means better service with a minimum of attention.

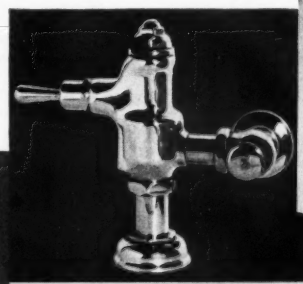
For more detailed information on Scovill Flush Valves, Scovill Brass Pipe, or other Scovill equipment, see your jobber or write direct to us—at the address below.



"... The 350 Scovill Flush Valves in this building have given us excellent service. Not a single one has been out of order since installation three years ago. No parts have been replaced. A few minor adjustments have been made without shutting off the water. I wish all the equipment in this building gave as little trouble as our Scovill valves. ..."

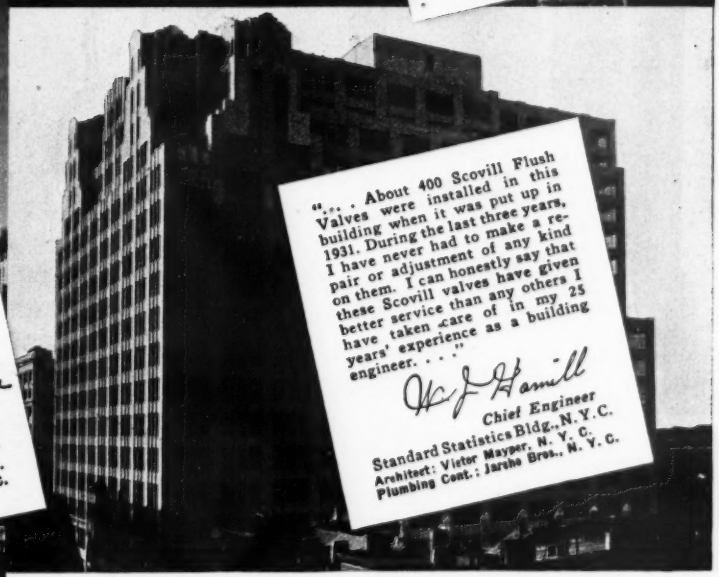
Ralph W. Campbell
Chief Engineer
General Electric Bldg., N. Y. C.
Architect: Cross & Cross, N. Y. C.
Plumbing Cont.: J. N. Knight, N. Y. C.

The Only Self-lubricating Flush Valve. That's why the Scovill Flush Valve works and wears so well. A lubricant is permanently packed in it ... for smoother action, longer service. An exclusive feature you won't find in another valve on the market.



"I am pleased to report that since this building was completed in 1931, the 300 Scovill Flush Valves have given perfect service; with no repairs or replacement of parts. Those responsible for the selection of Scovill valves for this building have my sincere thanks for their wise choice in such an important part of the equipment."

Edward Boshka
Building Engineer
Commerce Building, N. Y. C.
Architect: Ely Jacques Kahn, N. Y. C.
Plumbing Cont.: Jarcho Bros., N. Y. C.



"... About 400 Scovill Flush Valves were installed in this building when it was put up in 1931. During the last three years, I have never had to make a repair or adjustment of any kind on them. I can honestly say that these Scovill valves have given better service than any others I have taken care of in my 25 years' experience as a building engineer. ..."

W. J. Hamill
Chief Engineer
Standard Statistics Bldg., N. Y. C.
Architect: Victor Mayper, N. Y. C.
Plumbing Cont.: Jarcho Bros., N. Y. C.

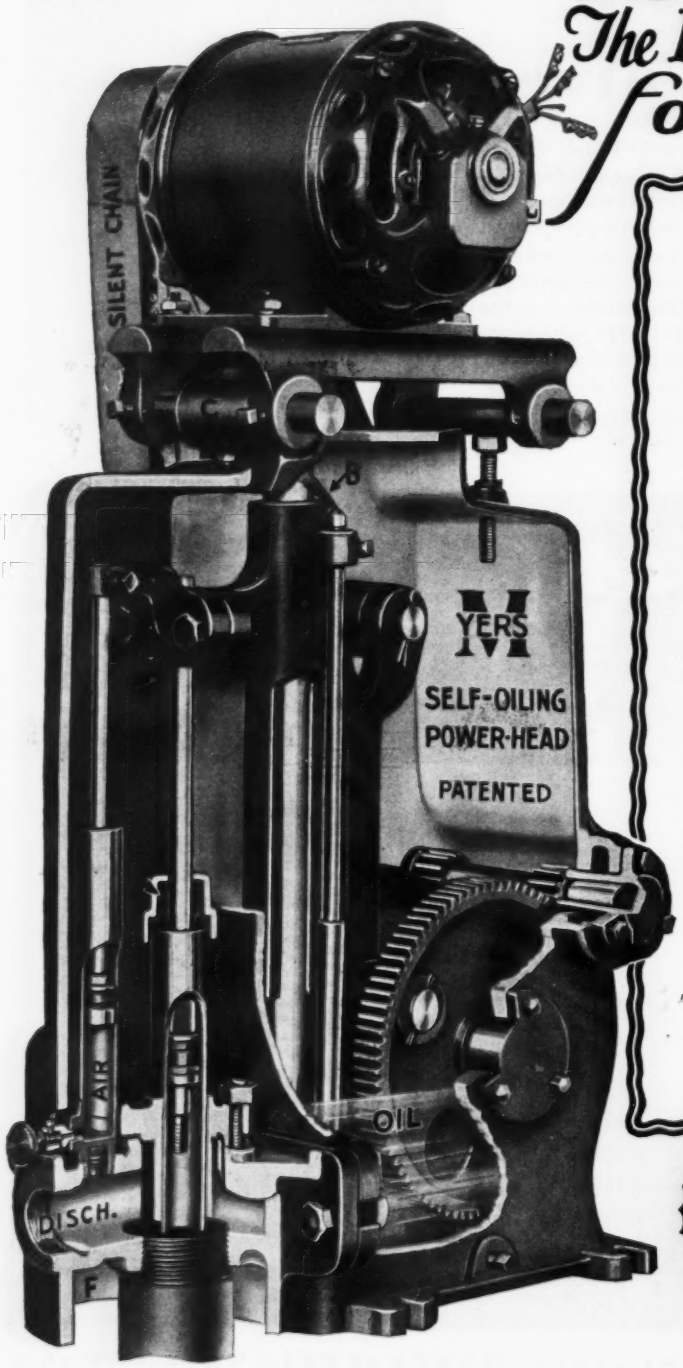
SCOVILL MANUFACTURING COMPANY
PLUMBERS' BRASS GOODS DIVISION
WATERVILLE • CONNECTICUT
SCOVILL FLUSH VALVES • SHOWER, BATH AND LAVATORY FITTINGS
MISCELLANEOUS PLUMBERS' BRASS GOODS

SCOVILL

MYERS SELF-OILING POWER PUMPS

A REGISTERED TRADE NAME

The Dependable Line for Deep Wells



Take Off Your Hat To The MYERS
PUMPS · WATER SYSTEMS · HAY TOOLS · DOOR HANGERS

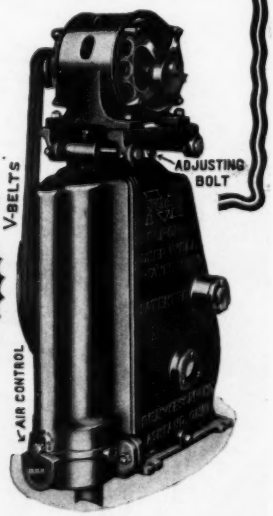
In many localities shallow wells are passing. Too uncertain during drought periods is the answer. Deep wells are more reliable. Those who must have water for stock, for irrigation, for manufacturing processes and for other purposes are now going to deeper levels for it.

You will find this to be true in your own locality. You will also find that Myers Self-Oiling Deep Well Power Pumps are ideally adapted for this service.

Compact units designed to continuously carry heavy pumping loads without care or attention, easy to install, economical to operate and dependable, they simplify deep well problems.

Drought already prevails in many localities. The demand for Myers Self-Oiling Deep Well Power Pumps is heavy. Your request by mail or wire for catalog and prices will have prompt attention.

"When you think of WATER think of MYERS Pumps and Water Systems"



THE F.E. MYERS & BRO. CO.
ASHLAND, OHIO.

PUMPS ✣ WATER SYSTEMS ✣ HAY TOOLS ✣ DOOR HANGERS

CHICAGO FAUCET NEWS

Issued Monthly by The Chicago Faucet Co., 2700-22 N. Crawford Ave., Chicago, Ill. Vol. 2, No. 9

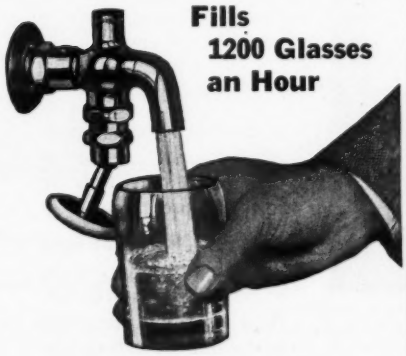
SUMMER HEAT AN AID

Need for Better Faucets More Apparent in Summer

KEEP UP STOCKS

Delays Hinder

Folks grumble about the heat because there isn't much else they can do about it. They seek relief through using and drinking more water. Faucets that rattle, drip, buzz, leak or pound—need repair or replacement—are an annoyance and an aggravation when demands upon them are severe—and tempers a bit short. Orders frequently grow out of just such circumstances. The plumber who keeps up his stocks of bath, lavatory and sink faucets during this season is in position to secure much of such replacement business. For, remember, when people want new faucets they usually want them at once. Delays sometimes hinder and even kill sales.



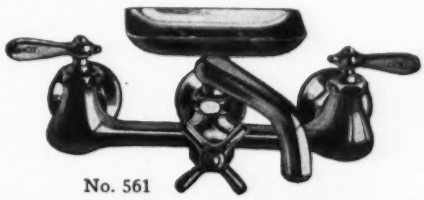
Fills 1200 Glasses an Hour

WHERE CROWDS CLAMOR FOR WATER, No. 313 SPEEDWAY GLASS FILLER KEEPS THE PACE

In cafeterias, soda fountains, soft drink parlors, bars and wherever else water or other beverages are dispensed in volume to large numbers of people, this No. 313 Speedway Glass Filler easily meets every requirement. It will fill up to twenty glasses a minute, which is beyond even peak requirements in most places. A rubber-tired wheel, as shown in the illustration, operates from a universal joint and can therefore be pushed from any angle so that glasses may be filled more quickly than where pressure from only one direction is possible. Also furnished with single or double draft arm or for draft arm already installed. The finish is softly lustrous chromium. Customers for the Speedway are not hard to find.

A REALLY "SWELL" 3-WATER FAUCET

It is the No. 561 Streamline Classic Sink Faucet, for sinks with hot and cold soft water and cold city water. It has, of course, the famous Quaturn operating unit, which closes *with* the pressure and whose only wearing parts are as easily replaceable as an electric light bulb. Has unbreakable metal dish and handles. Renewable seats are of Monel metal. Low soap dish is below top of sink back, yet overhead spout is high enough for filling deep vessels. Everlasting, lustrous chromium plate makes this faucet a delight to the eye—a really "swell" faucet. Furnished with female inlets for ½-inch pipe on 4-inch centers. China dish and handles optional at same price; specify No. 564.



No. 561

ADD-A-SHOWER BRINGS QUICK SUMMER SALES RESPONSE

Appeal Is Universal

From every quarter come reorders for Add-a-Showers from plumbers and jobbers who evidently have difficulty in keeping up with the demand. Now is the very peak of the season for shower equipment sales, and Add-a-Shower, because of its adaptability to every bathroom without change or disturbance, and also because of its very moderate cost, has a universal appeal. Fine profits await all who push Add-a-Shower now.

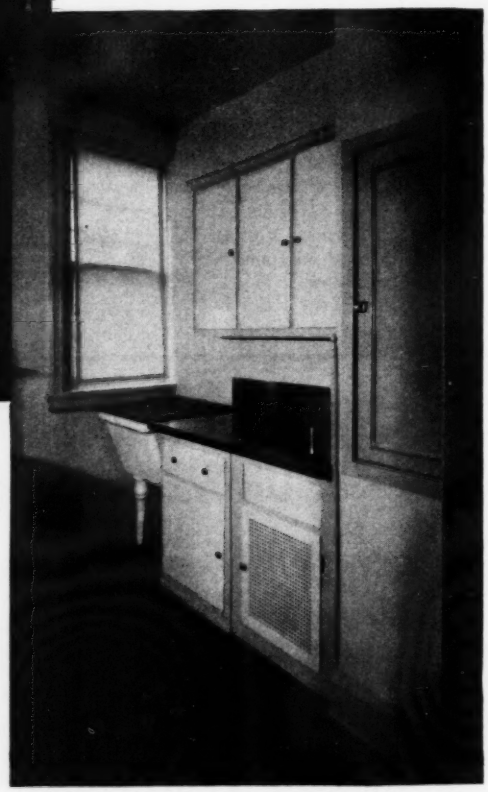
PUSH BUTTON, FOOL PROOF, SELF CLOSING

Wherever you find need for a faucet to dispense water where there are irresponsibles — schools, asylums, prisons and wherever else a self-closing faucet may be desirable—install this No. 333 Push Button Self-Closing Basin Faucet and be sure of complete satisfaction. It is vandal proof and fool proof. Nothing can be done to it but turn it on. It turns off itself. There are no handles or other parts which might be taken off. It cannot be propped or wedged open; nor can it in any way be permanently closed against opening.

Like all other Chicago Faucets, the No. 333 has the celebrated Quaturn operating unit which closes *with* the pressure and whose wearing parts, a Monel metal seat and composition seat ring, are as easily replaceable as an electric light bulb. Thus there is no leaking, no grinding and no repair bills.

New SINKS *put old apartments back in the* SWIM!

"BEFORE" *view of kitchen in one of 24 apartments in Crescent Court Apartments, Plainfield, N. J.*



"AFTER" *view of kitchen in one of 24 apartments in the Crescent Court Apartments. Remodeled with "Straitline" Monel Metal Cabinet Sink and built-in cabinets. Kitchens in all of the 24 apartments were similarly renovated. Plumber—George W. Bowe, 24 Somerset St., Plainfield, N. J.*

Plainfield (New Jersey) Plumbing Contractor lands Crescent Court modernizing contract . . . 24 "Straitline" Cabinet Sinks of Monel Metal

CRESCENT Court Apartments, Plainfield, N. J., was a smart, modern house when it was built. Even after the years brought obsolescence, it was still a good one.

But now the "good old days" are back again at Crescent Court. It's had its face lifted and is getting lots of new leases in its life.

A very nice job for the plumber, too. For in every one of the 24 apartments a gleaming Monel Metal "Straitline" Cabinet Sink is being installed.

Remodeling projects like this offer a profitable source of business for plumbers who go after it.

Right now property owners everywhere have *got to modernize*, if they're going to get tenants at good rents . . . and to their women prospects *modern* means *Monel Metal*.

Women are fascinated by Monel Metal's silvery beauty, its absolute immunity to rust and the ease with which it is cleaned.

You can see how Monel Metal has gripped their imagination by looking at the editorial pages of the women's magazines. It is extraordinary how many articles and illustrations featuring Monel Metal equipped kitchens the editors are publishing. Obviously they wouldn't do this if their readers were not interested.

In addition, there is Monel Metal's unceasing advertising campaign that has been going on for 7 years. It still continues, in magazines reaching a total of 10 million homes.

And Monel Metal equipment also offers the owner unequalled protection against depreciation.

Being solid metal right through, there's no coating to chip, crack or wear off. And its tough strength withstands blows from pots and pans.

Let us send you our new illustrated catalog giving dimensions of all the 57 standardized sinks and cabinet tops including the famous Monel Metal "Streamline" sink. Just drop us a line.

See the INCO *Exhibit of*
Monel Metal Household Appliances
at A Century of Progress, Chicago—1934
Home Planning Hall

• • •

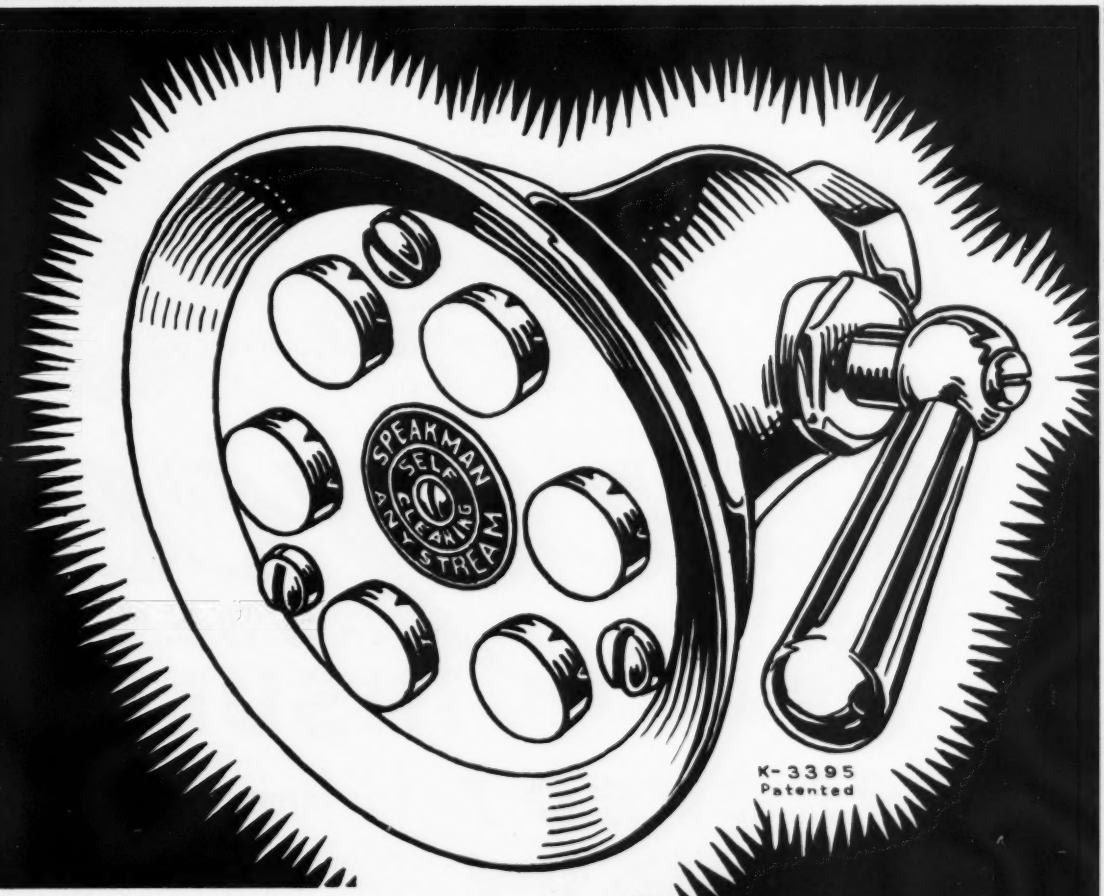
THE INTERNATIONAL NICKEL COMPANY, INC.
67 WALL STREET, NEW YORK, N. Y.

Monel Metal is a registered trademark applied to an alloy containing approximately two-thirds Nickel and one-third copper. Monel Metal is mined, smelted, refined, rolled and marketed solely by International Nickel.

Monel Metal

TO HELP YOU SELL MORE SPEAKMAN SHOWERS THIS SUMMER, WE MAKE THIS MOST . . . .

EXTRAORDINARY OFFER . . .



During July and August we will furnish *without extra cost* when specified, a Speakman Anystream Self-Cleaning Shower Head with all Speakman Showers and Combinations *

This shower head sells for $10.00. It originally sold for $15.00. Here is what you need to bring in the orders — Tell your customers who are thinking of putting in showers of this extra value; but they have to act promptly, for this remarkable offer is limited to orders dated from July 1st to August 31st. Ask for your supply of folders telling all about this head which permits the bather to have a flood, normal or needle shower by simply turning the handle. Send them to your customers, together with folders on Speakman Quality Showers — the kind you can install and forget.

Take full advantage of the opportunity, and you are sure to get the business, but remember the dates, July 1st to August 31st.

SPEAKMAN COMPANY
Wilmington Delaware

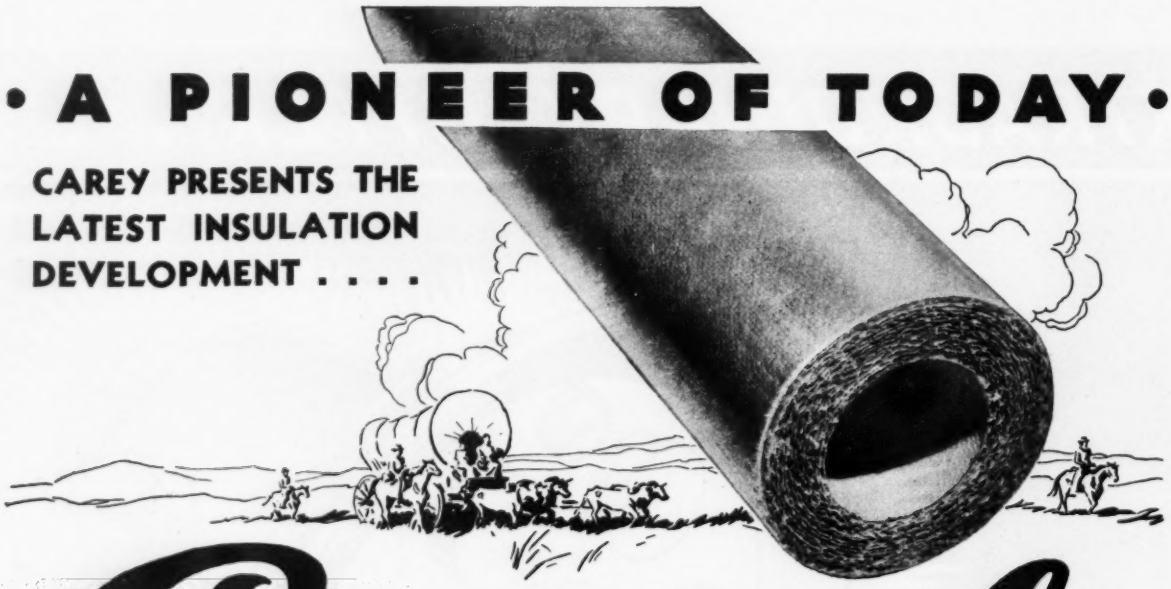
*

Exceptions are K-2765 and K-2770, K 2916 to K-2918A-5 inclusive. K-3210 to K-3220 inclusive. Because of the extremely low price of these showers they cannot be included in this offer. K-2916 and K-2918 are furnished with Adjusta-Spray heads without extra cost, when so ordered. *Neither is the Wildel Line.*

SPEAKMAN SHOWERS & FIXTURES

• A PIONEER OF TODAY •

CAREY PRESENTS THE LATEST INSULATION DEVELOPMENT . . . .



Careycel ASBESTOS INSULATION

PROVED! 30% LESS HEAT LOSS!

CAREYCEL FACTS

An exclusive, patented Carey product, extremely uniform in low heat conductivity.

Shrinkage negligible, only one-tenth as much as air cell type.

Smooth, substantial structure.

Wide distribution—Carey branches in all principal cities.

For temperatures up to 300°F.

Thorough and impartial tests, conducted by a leading research laboratory, have demonstrated conclusively a 30% reduction in heat losses, in a comparison with the commonly used air cell type insulation of the same thickness and selling in the same price range.

This outstanding superiority of CAREYCEL points the way to drastic cuts in fuel costs in millions of heating plants the country over. It means a tremendous volume of new business in the insulation field.

The man who pays the fuel bills will be quick to appreciate the savings of this improved insulation. Those who recommend or specify CAREYCEL are sure to profit from the good will of their customers.

Send today for free sample and full details of this extraordinary insulation development. Write Department C.

THE PHILIP CAREY COMPANY

Dependable Products Since 1873

LOCKLAND, CINCINNATI, OHIO **Branches in Principal Cities**

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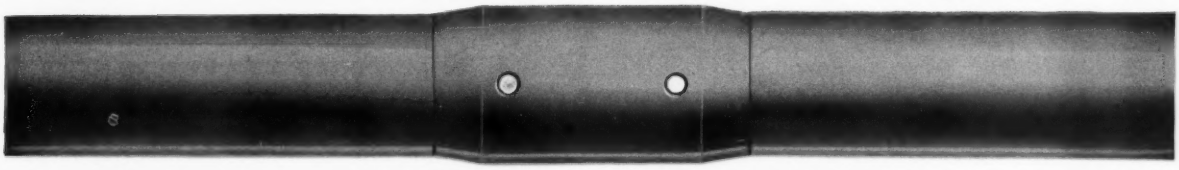


WILL NOT LOOSEN IT

RUST will never have a chance with STREAMLINE

TRADE MARK REG. U.S. PAT. OFFICE

FITTINGS AND COPPER PIPE

•

Send for Catalog F,
illustrating the complete line of STREAMLINE *Fittings and Copper Pipe—yours for the asking.*

THERE are no threaded or flared joints to loosen by vibration in an installation of STREAMLINE Fittings and Copper Pipe.

Vibration is harmlessly dissipated over the entire system and not localized at threaded joints. The connection formed by a STREAMLINE Fitting is a leak, rust and vibration proof bonded joint of pipe, solder and fitting. (Microphotographs prove this beyond a shadow of a doubt). The joint in an installation of STREAMLINE materials instead of being the weakest point is actually the strongest.

Repeated tests run on a 10 ft. length of ¾ in. vertical pipe containing of the patented joints, in which the lower end was held rigid and the upper end attached to a vibrator running continuously, day and night, for one week, showed not the slightest sign of failure at any of the connections. The section of pipe was subjected to 850 vibrations per minute, totalling 8,568,000 vibrations over the week's period. (A severe test this—we believe you'll admit).

Connections made with STREAMLINE Fittings to hard copper pipe have successfully withstood over 16,000,000 vibrations or tests run for aviation fittings. (Standard Aviation fittings fail, as a general thing, at less than 8,000,000 vibrations).

Absence of clogging, rust and freedom from the harmful effects of vibration are two of the many reasons why STREAMLINE protects the building owner from costly damage from leaking water, and the plumbing contractor from embarassing explanations, and loss both in prestige and pocket.

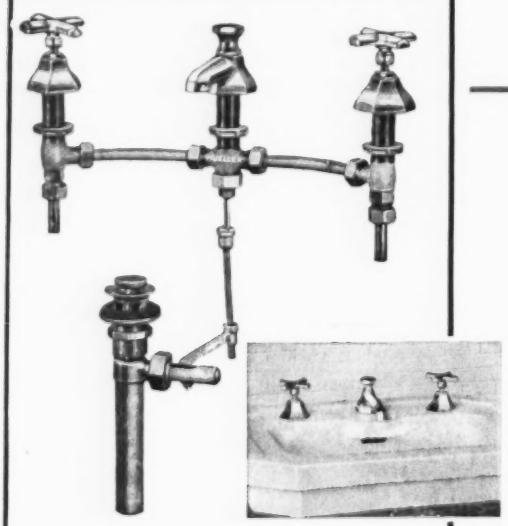
STREAMLINE PIPE AND FITTINGS
PORT HURON, MICHIGAN **CO.**
DIVISION OF MUELLER BRASS CO.

STYLES *may Change*

Years of service—negligible repairs

"In the latter part of 1921 we installed 470 Mueller Self-Closing Lavatory Faucets, two in each of the 235 rooms in the Rialto Office Building. I have nothing but the highest praise for the durability and serviceableness of these faucets. During these thirteen years of constant use, the replacement or repairs that have been necessary have been minor, and the total cost would not equal the cost of one faucet, which is the best recommendation I can make."

(Signed) E. N. HART,
Manager Rialto Office Bldg., San Francisco



—but Quality lives on

YOUR experience has shown you that there is more than one satisfactory *design* for a faucet—but only one way to make a GOOD faucet.

Throughout America there are examples of this—Mueller Faucets that have seen twenty to thirty years of service with an almost unbelievably low maintenance cost. They lack the shining Chromium and modern design of modern Muellers, but the old Muellers and the modern Muellers have one thing in common—that uncompromising craftsmanship without which good design is meaningless.

In this age when sharp competition has too often induced hurried methods and skimping of materials, Mueller Faucets, combining modern design with old-time thoroughness of construction, are the sound answer to all faucet requirements.

See the *old* Muellers—hear the story of their performance from those who have lived with them. Then consider the fact that *modern* Muellers are made by a concern that has never deviated from its high standards. That will be your *final* reason for recommending and installing only Muellers.

MUELLER Quality—at a reasonable price

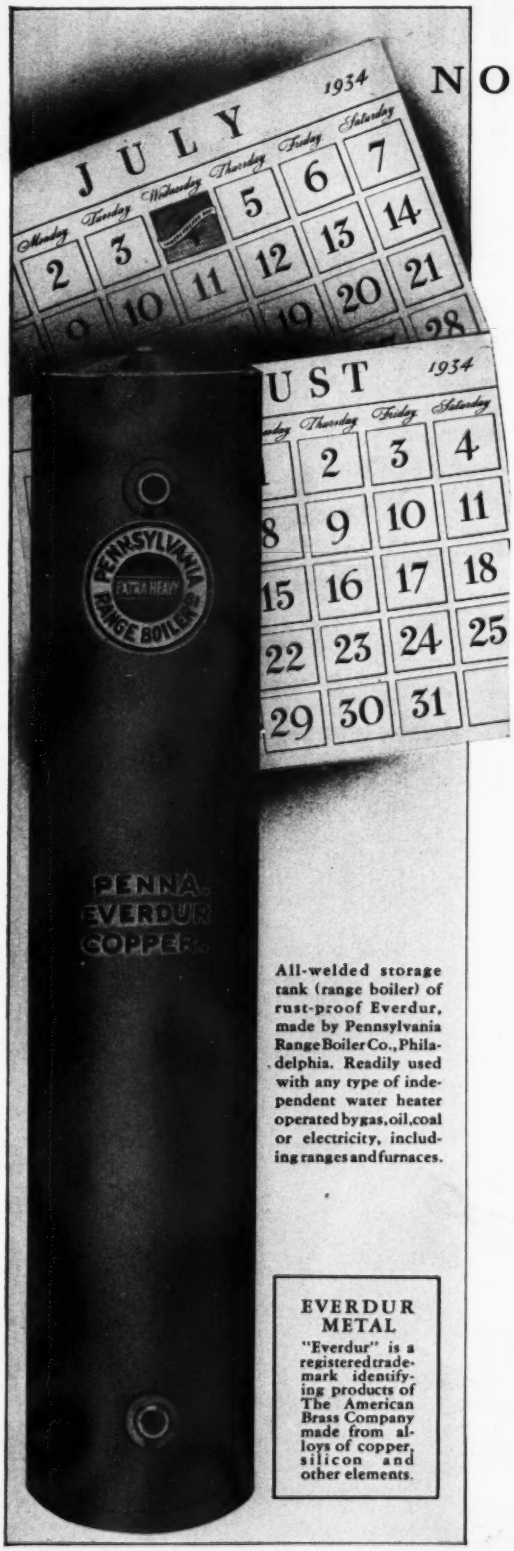
The new Mueller Art Craft Staple Line is strictly in key with the times. It offers richness of finish and design at a reasonable price that makes it popular everywhere. A typical Lavatory Combination is illustrated above. Ask for new circular covering an ideal line of Art Craft Staple replacement units for sinks, lavatories and bathrooms.

MUELLER CO., Decatur, Illinois

Factories: Decatur, Ill.; Chattanooga, Tenn.; Los Angeles, Calif.; Sarnia, Ont.
Branches: New York and San Francisco

MUELLER FAUCETS

DEPENDABLE SINCE 1857



All-welded storage tank (range boiler) of rust-proof Everdur, made by Pennsylvania Range Boiler Co., Philadelphia. Readily used with any type of independent water heater operated by gas, oil, coal or electricity, including ranges and furnaces.

EVERDUR METAL

"Everdur" is a registered trademark identifying products of The American Brass Company made from alloys of copper, silicon and other elements.

NO BETTER TIME THAN

now

to push the sale of

EVERDUR
RANGE BOILERS

ANY TIME is a good time to sell the *convenience of rust-free hot water,* which is something that everybody wants all the time.

How many houses in your community have rusting range boilers? How many have otherwise unsatisfactory heater tanks? And how many have no hot water supply system at all? To some of these homes now . . . and to others, week after week . . . you can sell storage tanks of rustless Everdur.

A special drive for Everdur range boiler business should be well worth while. Every installation that you sell increases your profits . . . and helps your reputation with the better and more desirable type of customers.

Everdur is Copper . . . the accepted non-rust metal . . . scientifically alloyed to provide the strength and welding properties of steel! And Everdur *cannot* rust! Your customers and prospects will appreciate that fact particularly, for all of them want hot water that is rust-free . . . not only when the tank is new, but indefinitely.

Tanks of this strong, rustless metal are standard with leading makers of automatic water heaters and range boilers. Additional data about Everdur . . . an exclusive Anaconda metal . . . will be mailed on request.

THE AMERICAN BRASS COMPANY
General Offices: Waterbury, Connecticut
Offices and Agencies in Principal Cities

ANACONDA
from mine to consumer

EVERDUR METAL *for* TANKS

JUST 3 MONTHS OLD

"Standard" NEO-ANGLE BATH $104.85* complete

* Price includes bath in white regular enamel, complete with bath and shower fitting. Plus local delivery and installation by your registered master plumber. Time Payments Available. Price subject to change without notice.

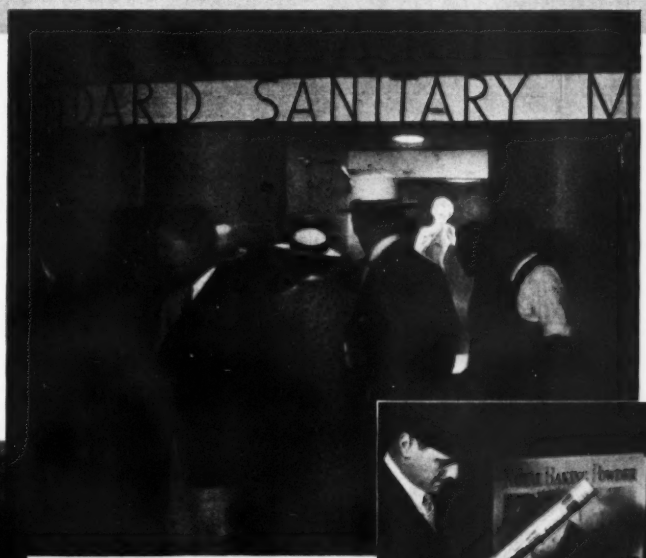
Standard Sanitary Mfg. Co.
PITTSBURGH, PA.
Division of
AMERICAN RADIATOR & STANDARD SANITARY CORPORATION

PAT. NO. 1,844,988

© 1934 BY S. S. M. CO.

D and the whole nation's talking about the "Standard" NEO-ANGLE BATH

FROM all parts of the country come enthusiastic reports . . . Never before has a bath aroused such comment, created so much interest, caused so much talk among so many people. Bathrooms already planned are being done over to take the Neo-Angle Bath. In new building—homes, hotels, clubs—the Neo-Angle Bath is being specified. Its new lines, its revolutionary conveniences, its appearance, its distinctiveness, are making more people think of modernization, opening a wide, new market. And the advertising is bringing them in to look . . . and see . . . and buy. Are they coming to you? Get in touch with us, or with your jobber — now!



THE SENSATION OF THE N.A.M.P. WASHINGTON SHOW: All traffic was stopped in the vicinity of the Neo-Angle Display at the N.A.M.P. Show by enthusiastic crowds blocking the aisle to see the sensational new "Standard" Neo-Angle Bath.

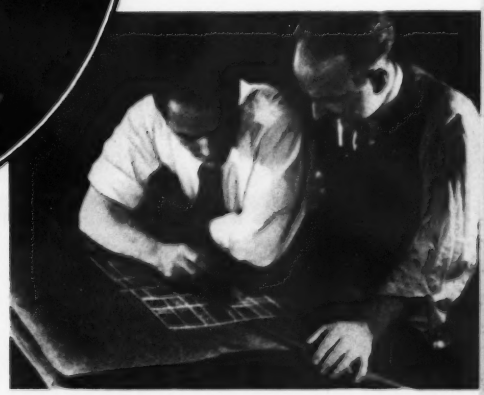
PROOF FOR SKEPTICAL HUSBANDS: Here is six-footer Joel P. Baker of the Washington Office, demonstrating its size and comfort to interested Show visitors.

STOPS BRIDGE GAME IN SAN ANTONIO: "The other afternoon practically the entire conversation was about nothing but that new bath," says a woman from San Antonio.

COMMUTERS DISCUSS NEO-ANGLE: On trains, street cars, buses, home-bound commuters engage in animated discussion of the merits and advantages of the new Neo-Angle Bath. "It's about time a real roomy tub was made," they say.

OVER BACKYARD FENCES: Housewives are among the most ardent admirers of the Neo-Angle Bath. Over teacups, bridge tables and backyard fences they are talking about its handsome appearance, its comfortable seats, its convenience.

"IT'S A HONEY!" SAYS THE TRADE: "It certainly has pepped up business—all the boys are talking about it. And the public's interest in the Neo-Angle Bath has helped us sell more of other fixtures, too."



EXCITEMENT AT THE DRAFTING TABLES: Architects are busy specifying the Neo-Angle Bath in new construction and remodeling. "It's the first chance in years to do something new with a bathroom," they agree.

Hook jaw of chrome molybdenum nickel alloy steel.

Instant grip and let-go. No slipping. You can't lock it on a pipe.

Full-floating hook jaw has handy accurate pipe scale.

Replaceable heel jaw of chrome molybdenum nickel alloy steel.

We guarantee you can't break or distort this housing.

Handle and housing of new Super-X Alloy Metal —double the old RIDGID strength.

Adjusting nut spins freely in all sizes, 6" to 60".

The New All-Alloy RIDGID is HEAVY-DUTY

YOU don't have to buy a special RIDGID Wrench to get an extra powerful tool. All RIDGIDs are heavy-duty.

The new RIDGID is twice as strong as the old model that won a great reputation for strength. The new Super-X Alloy Metal is neither malleable nor steel but it has the advantages of both. It simply doubles the strength and power of this already unusual wrench.

For instance, the 24" size will hold a load of 3½ tons 9½ inches from the jaws. It has done it over and over in official tests.

If you want strength and safety, buy RIDGID. And you get a lot of other satisfactions no tool gives you, besides.

THE RIDGE TOOL CO.
Elyria, Ohio, U. S. A.

RIDGID
PIPE TOOLS

SOUND ENGINEERING?
MODERN DESIGN?···
SENSIBLE PRICES?··
You get them All
WHEN YOU SPECIFY—

E 3658—Metropolitan Metal Handle (High Spout)

E 3654 — Four Ball Handle with Removable China Index (High Spout)

McDONALD *Faucets*

E 3657 — All Metal Cross Handle (High Spout)

E 3627 — All Metal Cross Handle — Indexed (Large Pattern)

E 3656 B — Metal Lever Handle (High Spout)

E 3624 — Four Ball Handle with Removable China Index (Large Pattern)

E 3419—Combination Sink Faucet Metal Soap Dish and Handles

McDonald Compression Faucets are the kind you'd expect from a company that has been serving the plumbing trade for more than 3 generations—the logical result of a competent engineering staff, a skilled pattern-making department and a foundry with the latest-type electric furnaces and production equipment. All McDonald Compression Work is made of bronze metal—85% copper, 5% tin, 5% lead and 5% zinc.

. . . McDonald HIGH SPOUT Basin Faucets are not only attractive in appearance, easy to clean and suited to any lavatory, but they comply with all ordinances requiring that the bottom of the spout be higher than any part of the lavatory slab.

. . . You may recommend McDonald Faucets with the full assurance that they will give the type of trouble-free service that enhances the reputation for dependability we are constantly striving to maintain. May we tell you the full story?

NRA

In addition to Bronze Plumbing Material, McDonald Products include Iron Hand and Wind Mill Pumps and Cylinders; Power Pumps and Water Supply Systems; Cast-Iron Plumbers' Specialties. . . . . Write for catalogue of lines you are interested in.

EST. 1856 McDonald

A. Y. McDONALD MFG. CO. DUBUQUE IOWA

OMAHA . . . MINNEAPOLIS . . . DES MOINES . . . KANSAS CITY . . . SIOUX CITY

BETWEEN OURSELVES

Thanks:
I am very much pleased with DOMESTIC ENGINEERING. Should be sorry to lose the news I find in it.
G. E. P.,
Massachusetts.

A Farewell Gift

CONGRESS gave our industry a farewell gift in the form of the National Housing Act. It is a direct attack on the tardiness of the building industry in responding to the impulses which have already stirred some other lines into greater activity. And building is of such overwhelming influence in the healthiness of general business that some heroic measures were forced through in the closing days of the congressional session.

Backed New Law

OUR industry was active in the preliminary work of getting the bill passed. Its principles appealed to many of those in the plumbing and heating field so they worked for it. On the other hand, the support was not as active at first as the opposition, leading congressmen to wonder why they should support a bill that had apparently more opponents than friends. So responsibility for the bill must be given largely to the direct influence of the administration which demanded its passage.

Restore Confidence

THE operation of the new law follows the belief that government credit can restore confidence sufficiently to enable private capital to take up its regular job of financing construction. With confidence low, investors, banks, building and loan associations, and other normal suppliers of such funds have hesitated to finance loans for new homes or for the repair of existing ones. The desire to keep funds liquid operated against long term loans even when the credit risk was good.

$8,000,000 a Day

THREE federal agencies are now in existence, designed to free building from the throttling grip of timid money. The Home Owners Loan Corporation is at work to relieve those who are actually in distress and need time and assistance in working out from under their present mortgage load. A few weeks ago, it reported that more than a quarter million homes had been helped, with cash payments to the holders of the mortgages, with taxes paid up and with the owners started off on a long term loan, with lower interest and amortizing payments. More than $8,000,000 a day is being put into the correction of this mortgage situation.

3-Way Help

THE TWO other agencies are the federal home loan banks which work directly with member institutions, not with individuals, and the new housing act. We hear a lot of priming the pump with government credit and our industry now has a three-way federal effort to aid its restoration.

Push Codes

A PLAN for each plumber's use is brought out in this issue by the newly elected president of the National Association of Master Plumbers, John J. Calnan. He finds in the recent reports of medical authorities on the amebic dysentery outbreaks, confirmation of the close relationship between plumbing and health. This relationship has been recognized through the passage of many municipal and state codes governing plumbing installations. But in too many cases, these codes are inadequate or are not enforced while many sections are not protected by codes at all. Now with medical support openly given, Mr. Calnan urges each one in the industry to take up the task of securing proper standards for plumbing work.

Win at Boston

IN THE field of automatic heat and air conditioning, progress in correcting some of the merchandising practices of the gas utilities is reported. Some of these companies, concerned only with their gas consumption, ignored the principles of business which appliance dealers must observe both to avoid bankruptcy and now because of NRA regulations. President Sherman of the American Oil Burner Association took up the fight and a better plan has been secured in Boston. As he tells you, it is important because producers of other kinds of fuels could easily follow the plan of the gas producers, with disaster to the dealer.

Watch Coming Months

A WEALTH of engineering, selling and news information comes to you in this issue. It is the task of a business paper to reflect the progress of the industry it serves and that task is a mighty interesting one today. So many developments are affecting and modifying your business that a business paper service is essential. You will want to read this issue to find out what has taken place. You will have to read the next issue because July promises more interesting changes. With codes, federal programs, intensified competition from without the industry, and a host of other changes taking place, your job is constantly affected and our job is to find out and tell you just how it is changed. Each month's issue is vital to you.

Your Editor

5,475,054 CRANE SHOWER ADVERTISEMENTS TO HELP YOU!

E SATURDAY
VENING POST

An Illustra
Founded A° D° 1728

1st ADVERTISEMENT

2nd ADVERTISEMENT

THE SMART PLUMBER IS COINING MONEY

out of Addenda Shower Sales!

● Don't miss out on this! Crane Addenda Showers and Refreshor Shower Head sales are running into the *thousands* . . . all because smart plumbers are canvassing homes, hotels, clubs, apartment buildings . . . *walking into sales* that Saturday Evening Post advertising is opening up! This amazing demand for showers . . . aided by a dry, hot spring and summer . . . is your cue to get in on this fast-moving, quick-profit item. Don't let your prospects complain that you can't supply them. Stock up *now* . . . you get your profit quick . . . you *walk right into sales* everywhere! Install the shower *in a few minutes* and the profit is all yours! Many plumbers are selling one and two to a home . . . dozens in apartments, hotels, clubs! Another ad is due soon . . . act quick!

• • •

JOE IS MAKING MONEY!

Don't envy another plumber who is striking it rich with this quick-sales item . . . go after homes, hotels, clubs yourself . . . it's easy profit!

ASK YOUR PLUMBER

SIMPLE TO ATTACH
NO MARRING OF WALLS

There's nothing like a good shower . . . so brisk and refreshing after a hot, sticky summer day . . . every bathroom should have one. The ADDENDA Shower is your answer: easy to install . . . it doesn't call for torn-out walls, new tile or chipped plaster . . . can be installed in a few minutes by your plumbing contractor! Crane Refreshor Head (you can buy it separately for your present shower) delivers a directed, splashless, clear-cut shower that needn't even wet your hair. A twist of the hand opens the shower head for a flushing clean-out. No small holes in the head to clog up with lime or sediment—this shower really works!

Call up a Crane plumbing contractor and get a new Crane ADDENDA Shower, REFRESHOR Shower Head and Transfer Valve Spout . . . all for $11.50! He will *install* your shower *quickly* and also supply you with the right . . . and a shower . . .

This Ad will appear soon

WATCH FOR IT

DISPLAY IT!

CRANE

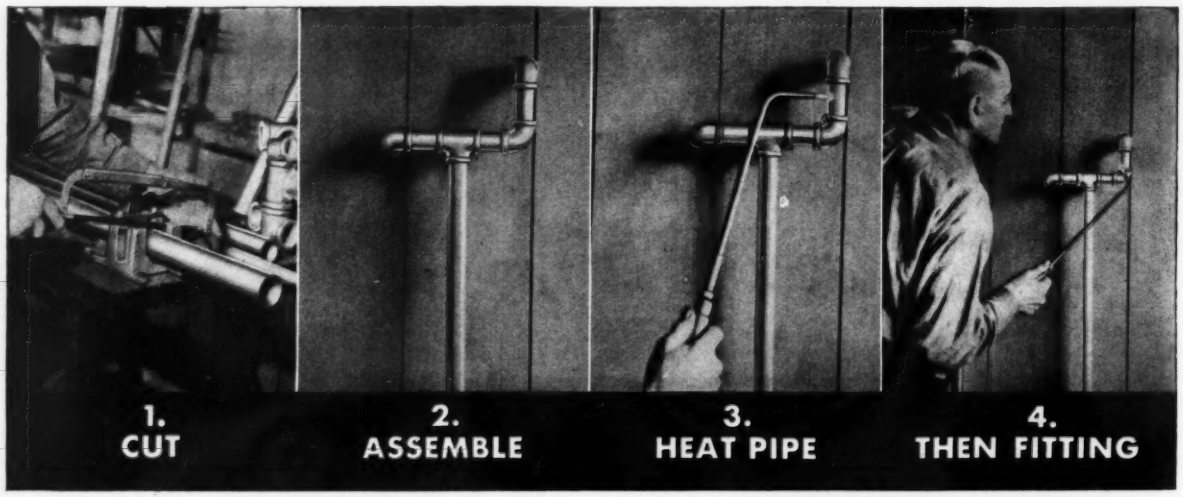
CRANE CO., GENERAL OFFICES: 836 SOUTH MICHIGAN AVE., CHICAGO
NEW YORK: 23 WEST 44TH STREET

Branches and Sales Offices in One Hundred and Sixty Cities

IF YOU DON'T SELL A SHOWER—SELL A REFRESHOR HEAD!

REFRESHOR HEAD

sells for only $3.10, chromium plated, swivel joint. Saves hotels and clubs 50% on water ... heating bills



THE WHITE WALSEAL RING

Proves a perfect joint

Walseal is truly the modern fitting for brass and copper pipe. It makes a joint that's vibration-proof, corrosion resistant, and one that will not creep — a joint that cannot pull apart under any temperature to which bronze or copper pipe can safely be subjected.

Thin wall copper tubing, I.P.S.O.D. can be used if economy is of primary importance. But for those who want the strength and durability of iron pipe size brass pipe or extra heavy brass pipe, Walseal are the only threadless fittings available. In fact, Walseal Threadless Bronze Fittings were designed specifically for these heavier brass and copper pipes.

The only tools needed are a hack saw and an oxyacetylene flame. Walworth incorporates a ring of the brazing alloy, "Sil-Fos" in each opening of the fitting. The proper quantity of the right brazing alloy is thus assured. To make a leak-proof run you merely cut the pipe, clean, flux, assemble the run, heat as directed and when the white Walseal ring appears a tight joint is assured in the fastest known way. Write for descriptive literature.

WALWORTH

VALVES FITTINGS and TOOLS
Backed by 91 Years' Service

WALWORTH COMPANY
60 EAST 42nd STREET, NEW YORK

DISTRIBUTORS IN PRINCIPAL CITIES THROUGHOUT THE WORLD

OUR INDUSTRY

July, 1934

Calnan Offers Timely Program

President John J. Calnan of the National Association of Master Plumbers has a personal message to every contractor in the industry on Pages 26 and 27 of this issue. It's well worth reading.

He sees in the awakening of the medical profession to the importance of good plumbing, properly installed, an ally which plumbing contractors can use and in fact should use. Recent developments have shown how closely good plumbing is related to good health and everyone, whether he be a doctor, a master plumber, a health officer, a city official or just a citizen with respect for his own and his neighbor's welfare, should insist on plumbing installations being beyond suspicion.

A great many states and cities have plumbing codes. Too many of them are not enforced and not all of them are complete. To secure a greater uniformity in the codes, the National Association approved a year ago a code worked up by its standardization committee under the chairmanship of Jere L. Murphy of New York. It furnishes the guide by which local groups can tackle, with national backing, the task of securing a new code or of reversing an inadequate one.

As a guarantee of protection to the public who certainly want and need the purest possible water supply and the safest sewage disposal, all cities and states should bring their codes up-to-date and insist on their enforcement. With medical recognition of the importance of good plumbing, that job can be taken up now with more confidence and with a greater assurance of success.

These will bring more business to the plumbing contractor. Mr. Calnan feels that such a program, fully carried out, would bring a big increase in business promptly and a steady increase for years to come. But surely no one can criticize such a program as selfish when he recalls the epidemics which have resulted from contaminated water used from plumbing systems installed by incompetent men and permitted by inadequate or poorly enforced codes.

The stakes are too high when you start gambling with public health. Any charge of individual advantage to the master plumber is submerged in the immensely greater good which would follow from bringing all of this country's plumbing systems up to a minimum standard of safety.

Mr. Calnan's program is practical and timely. It is a call to action by every individual in the industry. You should take quick advantage of his suggestions.

Favors Distribution Through Plumbers

A few days ago, we received a declaration of policy by a manufacturer which reflects his appreciation of the relationship between good plumbing, health, and customer satisfaction. He writes:

"We consider that there is a close relationship between plumbing and health. We consider it of vital interest, not only to the user, but to the public, from the standpoint of health, to guard against installation by those who may willfully or ignorantly violate sanitary laws and endanger public health by failing to insure proper installation by those technically experienced, competent and trustworthy. It will consequently be our policy to avail ourselves of those channels of distribution which seem to us best fitted to give effect to those considerations.

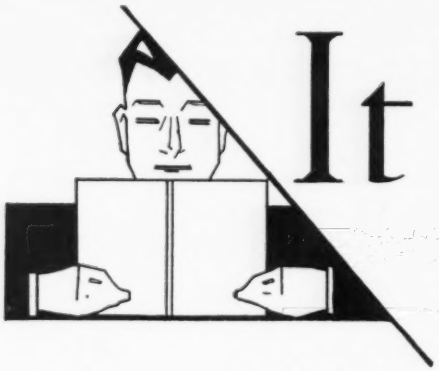
"In marketing, we are following the custom which, over a period of two generations, has been proven sound in the distribution and installation of plumbing material."

Try Out New Housing Act

In its national housing act, the administration at Washington has made a direct assault on the problem of reviving employment in the great building industry and of releasing again for investment in homes and real estate the millions which formerly made our industry one of the largest in the country.

The expectation is that this law, by giving definite governmental guarantee to investors in housing, will correct the hesitancy and caution which have ruled that market for the past four years. With this revival of investment, its sponsors hope the need for actual outlay by the government would be removed.

As a direct attack on a major problem not only of our industry but of the whole field of business, the act will be speedily tested out by alert heating and plumbing contractors.



It happened

Offer National Housing Act As Aid to Building

Government Credit Will Be Put Back of Loans for New and Remodeling Work on Homes and Small Buildings

The passage by congress of the National Housing Act is an outstanding development of the month. It represents the application to this industry of one of the principles of the present administration—that of using government credit to make investors feel secure with the hope that such confidence will then renew private activity without the need of using governmental funds.

Figures showing the size and importance of the building industry, as marshaled in support of the law, are impressive. Some repairs are needed to 13,000,000 buildings in the United States and major repairs to 3,000,000 to make them habitable. A 5-year slowing down in building has piled up an actual shortage of 1,000,000 to 1,750,000 homes.

An analysis of the new law, and some of its expected benefits, as given out by the United States Information Service, follows:

Under the terms of the Act, lending institutions, including banks of every type, may have loans to any reputable property owner for the purpose of repairing, remodeling or renovating his property, insured.

The process will be simple. Applicants for loans who qualify will make out notes, as in the past, and, as in the past, obtain their money through their local banks, building and loan associations and other lending institutions which under the Act may discount such notes at their face value with the Federal Housing Administration.

Because of the necessity of perfecting the organization to administer the Act, it probably will be several weeks before repair and modernization loans will be available.

The benefits of the new Act are nation wide, and are available to the great mass of owners of mortgaged homes who are not in distress, who are paying their interest charges and their tax bills, and to the army of potential home builders who have not enough money to pay all cash and cannot get the necessary loans.

Loans of like type will also be available on apartment houses, office buildings, factories and other commercial properties, but always within the $2,000 limit.

These character loans will be at low rates of interest, with the principal payable in installments over periods ranging from three to five years, depending on the size of the loan.

The limit on loans for new homes will be 80 per cent of the completed value up to $16,000, with the possibility of the entire sum going into the building. Thus the owner of a lot properly appraised at $600 may erect a $2,400 home with the mortgage money, with the lot as his equity in a property worth $3,000 when completed, escape the burdens and risk of a second mortgage he would need under the existing mortgage system, and within 20 years own it free of incumbrance. This would be a 100 per cent loan, for insuring which he will pay a small premium. This will provide a pool, not only more than sufficient to take care of all losses, according to the strictest actuarial tests, but actually to serve to retire the loan in less than the 20 years.

The provision for existing mortgages is calculated to make liquid the loans of lending institutions and free large volumes of money for new construction by making them insurable up to 80 per cent and discountable by banks now forbidden to discount such paper, and with the national mortgage associations provided under the Act.

The function of the Federal Housing Administration, which will administer the Act, differs radically from those of the Home Owners Loan Corporation, and the Federal Emergency Administration of Public Works.

The Federal Housing Administration will loan no money, its function being to provide security and safety for private investors by providing insurance for loans for rebuilding and modernization which will be based on the character of the borrower, and for mortgages on new and existing buildings.

The Administration will assist those owners of property that are not in distress, both as to taking over complete mortgages and assisting in rebuilding and renovation, whereas the Home Owners Loan Corporation is restricted to assisting those owners of mortgaged homes who are in distress. The H. O. L. C. does not assist in the financing of new homes and only advances money for repairs on homes on which it already has made loans or which are eligible for distress loans.

It is therefore plain that the Fed-

this month!

eral Housing Administration has been created to carry out new functions not provided for by any existing governmental agency.

Through it will come the translation of idle money into working money, with the first flow of funds to industry coming, as stated, through the making of loans for the modernization and repair of existing homes. The first beneficiaries of these loans will be the forgotten 38,000,000 still gainfully employed, who are paying the interest on their mortgages and their taxes and can repay the loans out of income.

The chief beneficiaries will be the 5,000,000 of the building and allied trades who are now idle.

Form Association in South Carolina

South Carolina master plumbers met in Columbia, S. C., on June 22. This was a convention for ratifying and completing the organization of the South Carolina Master Plumbers Association.

That state has not had an association for years and its organization brings the National Association of Master Plumbers close to its goal of having an affiliate state association in each of the 48 states. The attendance of 54 represented all sections of the state.

The officers of the new association are J. J. McDevitt, Greenville, president; B. S. Mulligan, Columbia, vice president; and J. B. Creighton, Spartanburg, secretary.

John J. Shanahan of Norfolk, Va., a director of the National Association was present and led an active discussion of the new code of the plumbing contracting industry.

The following are members of the board of directors: W. K. Prause, Charleston; C. C. Thompson, Columbia; R. R. Wood, Columbia; D. Jack Goodwin, Greenville; Tom Chilton, Florence; and C. L. Lee, Spartanburg.

Code Authority Waits for N. R. A. Approval

The NRA has approved the members of the Code Authority for the plumbing contracting division. But that approval came about three weeks after the code itself went into effect. Now the task is to secure approval of the by-laws which the Code Authority has set up for its guidance and has submitted for NRA sanction. When that is secured, the code authority can begin to function.

The manufacturers are endeavoring to secure better enforcement of their code. The wholesaler's committee is still at work endeavoring to secure approval of its code.

Medical Convention Condemns Old Plumbing as Menace to Health

That amebic dysentery is not a tropical disease and may occur anywhere in the United States; that the cysts which cause it can not be killed by the chlorination of water; and that a modern plumbing system, correctly installed, is the best preventative against amebic dysentery were among the points made at the recent convention of the American Medical Association in Cleveland.

"Amebiasis is far from a rarity in the United States and from six to twelve million persons are believed to have the infection all the time," said Dr. Charles F. Craig of New Orleans.

"Contamination of the water supply is one of the two principal causes of the disease. The other is infected food handlers.

"Contamination of the water supply can be prevented by modern plumbing, correctly installed, so that pollution of the potable water supply with sewage is impossible."

Restaurants and hotels should provide their employes with adequate and sanitary toilets and washroom facilities, Dr. G. W. McCoy, director of the United States Public Health Institute, recommended.

An exhibit by the Chicago Board of Health showed by means of water flowing through glass tubing how a defective plumbing installation would permit the pollution of pure water. The exhibit emphasized the menace of attempted plumbing installations by handy-men and others not properly qualified by experience and training.

Iowa Wholesaler Backs Plumbers Code.

E. I. Leighton, president of the Leighton Supply Co., of Fort Dodge, Iowa, and president of the Central Western Wholesalers Association, acted promptly when the plumbing contractors' code was signed. He prepared a copy of the code for his own representatives and for other wholesalers. This copy included comments on the code by President Barrett and news of Washington developments from DOMESTIC ENGINEERING.

His representatives were urged to help make the code effective and to spread the news among their customers about its approval by President Roosevelt and about its provisions. In his letter to other wholesalers, Mr. Leighton also asked for their support in making the code promptly known and observed.

Mr. Leighton and his organization also has worked to secure attendance at the various plumber meetings called in his territory at which the officers of the contractors' association explained the code and its effect on each individual's business.

NRA Approves 13 Members of Plumbing Contracting Code Authority

THE National Recovery Administration has approved the members of the Divisional Code Authority for the Plumbing Contracting Division of the Construction Industry. This is the first definite step taken since the plumbing contracting code went into effect on June 4.

The complete membership of the new divisional code authority is as follows:

Robert J. Barrett, executive director, representing N. A. M. P., 1240 Shoreham Building, Washington, D. C.

J. E. Boyland, representing non-members, 2413 Pennsylvania Avenue, N. W., Washington, D. C.

Thos. E. Burke, representing U. A. of J. P. and S. F. of the U. S., Machinists Building, Washington, D. C.

John J. Calnan, representing N. A. M. P., 440 South Dearborn Street, Chicago, Ill.

John Coefield, representing U. A. of J. P. and S. F. of the U. S., Machinists Building, Washington, D. C.

P. W. Donoghue, representing N. A. M. P., 342 Newbury Street, Boston, Mass.

George H. Drake, representing N. A. M. P., 218 Lexington Avenue, Buffalo, N. Y.

M. F. Garrett, representing U. A. of J. P. and S. F. of the U. S., Machinists Building, Washington, D. C.

E. B. Kleine, representing N. A. M. P., 329 Ludlow Avenue, Cincinnati, Ohio.

Alex Rotker, representing non-members, 1174 Bedford Avenue, Brooklyn, N. Y.

Jere Sheehan, Jr., representing N. A. M. P., 1609 Olive Street, St. Louis, Mo.

Charles M. Swinnerton, representing N. A. M. P., 109 South Broadway, Los Angeles, Calif.

Louis B. Tuchmann, representing non-members, 210 East 25th Street, Norfolk, Va.

The NRA now has under consideration the by-laws drawn up by the code authority. These by-laws must be approved before the authority can begin functioning. Such approval is expected promptly.

In the interval, while NRA confirmation of the code authority membership and of its by-laws was being awaited, many preliminary measures were taken in order to expedite the functioning of the authority. This has included the tentative setting up of state code groups as well as subsidiary groups for zones and localities. In many cases, the membership of these subsidiary groups has been chosen so that when its by-laws are approved, the divisional code authority will have a nation-wide organization ready to carry its instructions through to everyone in the industry.

Robert J. Barrett, president of the National Association of Master Plumbers during the term ended on June 30 and leader in that organization's efforts during the past year to secure a code, has been made executive director of the divisional code authority. Ernst L. Flentje, who has been active on code work of the plumbing industry since last October becomes assistant executive director, with Joseph G. Hildebrand, executive secretary of the N. A. M. P., serving as secretary-treasurer. The men representing the N. A. M. P. include some of its outstanding members; its president, John J. Calnan; four past presidents, George H. Drake, P. W. Donoughue, Edward B. Kleine and Jere Sheehan, Jr., while the seventh member, C. M. Swinnerton, has been an outstanding leader in Pacific coast organization work for many years. Photographs of these seven members were shown in DOMESTIC ENGINEERING in June. Photographs of the other six members are shown on the facing page.

In advance of government approval which would permit active functioning, the code authority through Mr. Barrett distributed a few days ago an outline of the code situation of which the following is part:

"When will the Divisional Code Authority, after its approval, delegate its authority to the administrative agencies recommended by the several states? The answer to this is that they will immediately grant such authority, and issue instructions as to procedure, to the states which have complied with the bulletins of April 24, May 15 and June 7 by dividing their state into proper

(Continued on Page 128)

Letterhead of New Code Authority

Robert J. Barrett
Executive Director

Ernst L. Flentje
Asst. Exec. Director

Jos. G. Hildebrand
Secretary-Treasurer

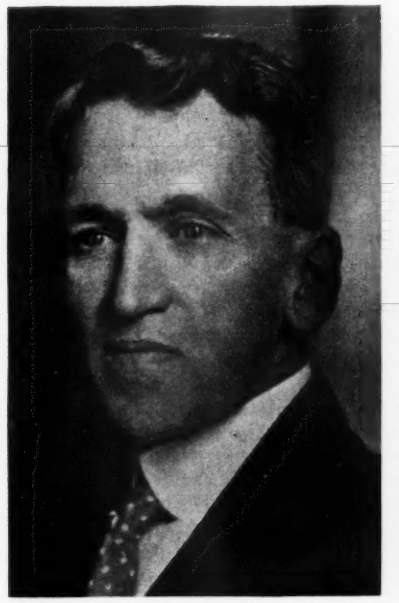
MEMBERS
Robert J. Barrett
John E. Boyland
Thomas E. Burke
John J. Calnan
John Coefield
George H. Drake

DIVISIONAL CODE AUTHORITY
PLUMBING CONTRACTING DIVISION
of the
CONSTRUCTION INDUSTRY

MEMBERS
P. W. Donoghue
M. F. Garrett
Edw. B. Kleine
Alex. Rotker
Jere Sheehan, Jr.
C. M. Swinnerton
L. B. Tuchmann

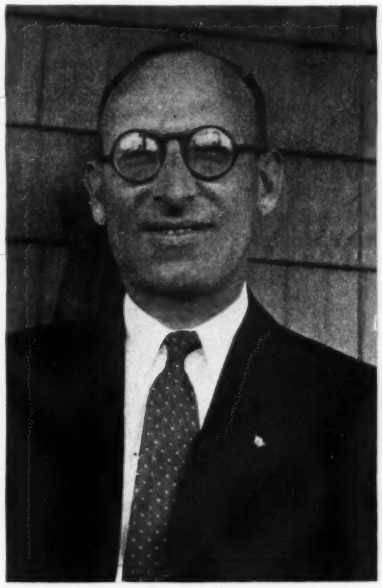
SHOREHAM BUILDING — METROPOLITAN 2022 — WASHINGTON, D. C.

Members of the Code Authority for Plumbing Contracting Division



J. E. Boyland

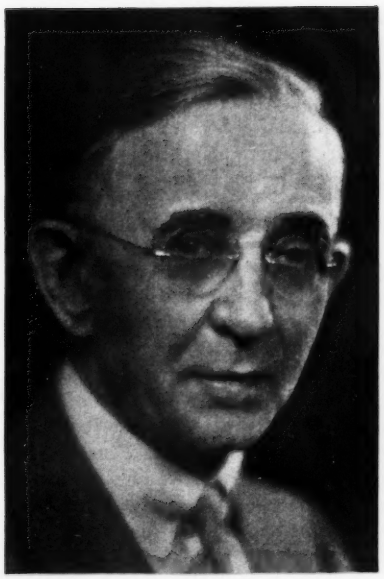
Louis B. Tuchmann



Alex Rotker

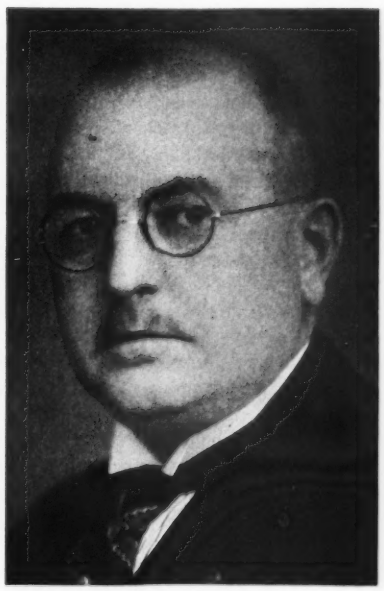
These six men with seven representing the National Association of Master Plumbers make up the divisional code authority for the plumbing contracting division of the construction industry. J. E. Boyland, Washington, D. C., and Louis B. Tuchmann, Norfolk, Va., with Alex Rotker of Brooklyn, president of the Kings County Master Plumbers Association represent non-members. John Coefield, general president, Thomas E. Burke, general secretary-treasurer and Michael F. Garrett, a general organizer, represent the United Association of Journeymen Plumbers and Steam Fitters of the United States and Canada

Thomas E. Burke



John Coefield

Michael F. Garrett



Revise State and City Codes to Protect

John J. Calnan, president of the national association of Master Plumbers, tells you—

The time is ripe for action on the part of the members of the national association throughout the United States, referring to the message of Dr. Herman N. Bundesen, president of the Chicago Board of Health, read at the recent national convention.

We should accept the advice of the attorney of the national association, the Hon. Patrick Hurley, to immediately make an effort to secure the revision of plumbing codes in the various states and municipalities to bring them up to the latest findings of the health authorities.

The report of Dr. Bundesen's committee on How to Prevent Amebic Dysentery by Sanitary Plumbing, supplemented by the conclusions of the American Medical Society at its recent convention in Cleveland showing the necessity to safeguard public health by having plumbing installations made by licensed master plumbers, has emphasized the importance and close relationship between sanitary plumbing and public health.

The plumbing trade of the United States has an unparalleled opportunity to stimulate the industry to a point where the men engaged in the plumbing business can be kept busy for years to come.

The time is ripe to secure the passage of sanitary legislation and to crystallize public sentiment in favor of having all plumbing installations made under the supervision of the licensed master plumber and strongly urges the members of the national association to take a more active and prominent part in politics and civic affairs, if for nothing else but to obtain a more rigid enforcement of the laws and ordinances governing plumbing.

The Sanitary Committee whose appointment was authorized at the national convention will gather valuable statistics for the use of the various states, but it is up to the members of the national association in their respective communities to individually take an active part in securing such revisions in

By JOHN J. CALNAN

President, National Association of Master Plumbers

THE message of Dr. Herman N. Bundesen, president of the Chicago board of health on how to prevent amebic dysentery by sanitary plumbing, read by Maj. Joel I. Connolly, chief inspector of the bureau of sanitary engineering of the city of Chicago, at our recent National convention at Washington, D. C., stands forth as a clarion call to the plumbing fraternity of the United States.

It would be most appropriate at this time to accept the advice of our attorney, the Hon. Patrick Hurley, when he stated at the National convention that every effort should be made immediately by the members of the National Association to secure the revision of the plumbing codes in the various states and municipalities to bring them up to the latest findings of the health authorities. It surely is a time for action and in the light of what has happened it should be a comparatively easy matter to arouse public sentiment in favor of adequate regulation governing the installation of plumbing.

More than anything else that has transpired in the past quarter of a century, the report of Dr. Bundesen's committee with which the trade throughout the country is familiar, supplemented by the conclusions of the American Medical Society at its recent Cleveland convention, has emphasized the vital importance and close relationship between sanitary plumbing and public health. It has served prominently to call attention to the danger of having handy, untrained men make plumbing installations, and in the public mind attaches a new importance to the Licensed Master Plumber in preventing the spread of disease, which in the past the master plumber himself has only half believed.

As stated by Dr. Bundesen in an address on the subject several months ago, in order to sell an idea you must first believe in it yourself. It is not enough that it may be an accepted fact. You must be thoroughly sold on it before you can convince others, and the situation which has recently developed, presents an unparalleled opportunity for the master plumbers of the United States to encourage the passage and enforcement of sanitary legislation and to create public sentiment in favor of having all plumbing installations made under the supervision of the Licensed Master Plumber. The time is ripe for the master plumber to take an active and increasing interest in politics and civic affairs, if for nothing else but to obtain a more rigid enforcement of the laws and ordinances governing plumbing.

NAMES NEW SANITARY COMMITTEE

While the Sanitary Committee of the National Association, whose appointment was authorized at the Washington Convention to acquaint health officers and heads of municipalities with the findings contained in Dr. Bundesen's report, may gather valuable statistics for the use of the various states, it will be up to the members of the National Association in their respective communities to individually take an active part in securing such revisions in their present ordinances as may be necessary to bring them up to date. By doing so, the master plumber will greatly aid in keeping the plumbing business in its proper channel.

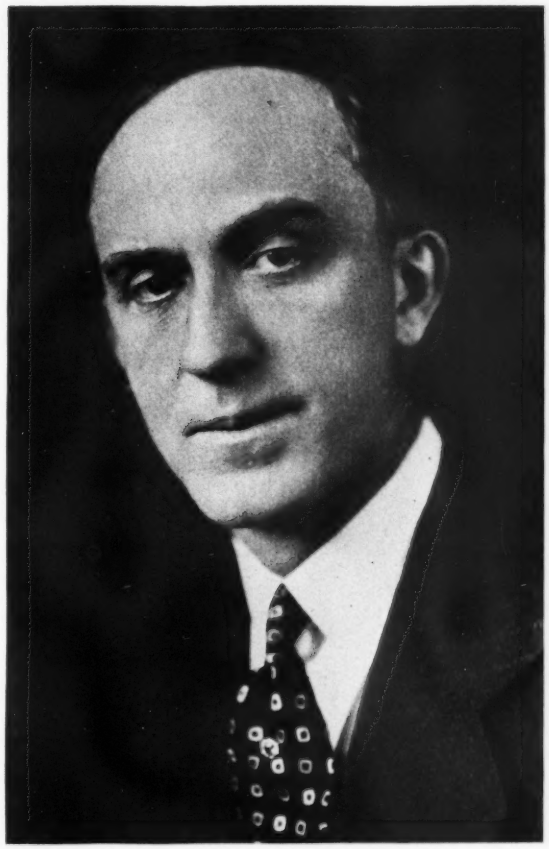
The acceptance of this responsibility on the part of

Health---CALNAN

their present ordinances, as may be necessary to bring them up to date.

The acceptance of this responsibility in a measure is a matter of self-preservation to prevent further encroachments on the industry and also advises in connection with the promiscuous sale of plumbing fixtures by direct-to-you and mail order companies, that all sales of plumbing fixtures should be periodically reported to the board of health as a means of preventing dangerous plumbing installations, and that the members of the national association should work for the enactment of laws which will compel the sale of plumbing fixtures by direct-to-you and mail order companies, who are the chief outlets for those evading the law, to be properly regulated and supervised.

President Calnan makes a plea to the members to help increase the membership of the national association in order to present a united front for the common protection of the industry and the men who are legitimately engaged therein.



our members in a measure is a matter of self-preservation, threatened as we are by encroachments on every side, and unless we do something to prevent it our business will gradually be absorbed by others. It is, therefore, an important reason for building up the membership of the National Association. Through the strength of numbers, we will be able to wield a greater influence to increase our prestige politically and secure better enforcement of existing laws and ordinances.

WILL STIMULATE BUSINESS

In its efforts to preserve the industry for the licensed master plumber, the National Association of Master Plumbers is doing something of substantial benefit for everyone engaged in the plumbing business, and to present a united front for our common protection it is the duty of every member of the National Association to do what he can to get the non-member to affiliate with our association. For the past few years, the plumbing trade throughout the country has suffered greatly from lack of business, but if our members will avail themselves of the present opportunity to secure as a health measure the passage of necessary legislation governing the installation of plumbing, they will stimulate the industry immeasurably and keep it busy for years to come.

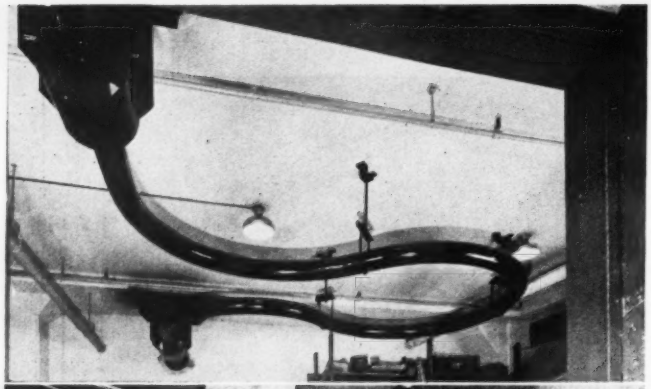
In connection with the promiscuous sale of plumbing fixtures by direct-to-you and mail order companies, they fail to realize or deliberately ignore the fact that the sale of a plumbing fixture is not fully consummated unless at the time the sale is made, steps are taken to see that the sale does not result in a menace to public health or does not enable the purchaser to violate the sanitary laws by installing or having the fixture installed improperly.

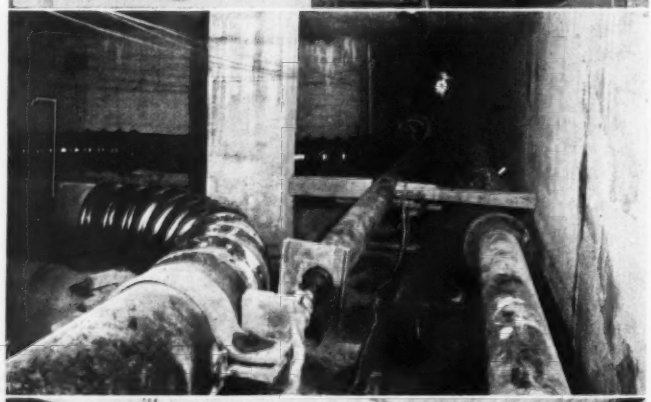
The sale of all plumbing fixtures and appurtenances having a sewer or water connection under existing ordinance regulations should be made through the licensed master plumber, who alone is qualified and responsible under the law to properly install them. In my opinion, this is the only consistent and safe argument for us to propose and fight for, if we are to remain master of our own business and are to continue to advance our science and be in a position to enable the health authorities to effectively enforce the law.

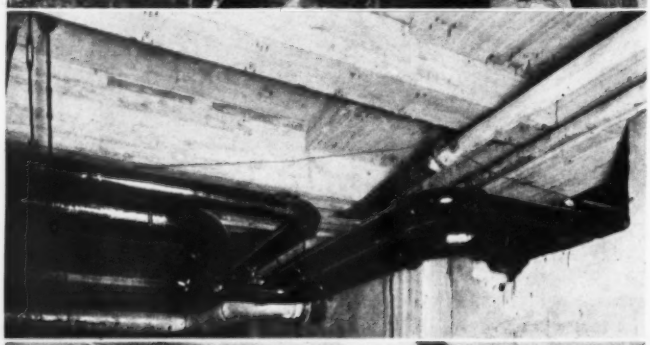
The sales of plumbing products by mail order and direct-to-you concerns direct to the public in localities where sanitary laws exist, as well as all fixture sales, should be periodically reported to the Board of Health as a means of preventing dangerous plumbing installations, and in our various states and cities, we should work for the enactment of laws and ordinances which will compel the sale of plumbing fixtures of direct-to-you and mail order concerns, who are the chief outlet for those who evade the law, to be properly regulated and supervised. It should be our ultimate goal to compel the sale of all plumbing fixtures through the licensed master plumber.

The master plumber is subject to and is expected to observe the sanitary laws and ordinances of our city and state, and we should use every possible means as an organization to compel all firms handling and selling plumbing fixtures to comply with the law.

As Mr. Hurley told the delegates at the Washington convention, "we have just started to fight."







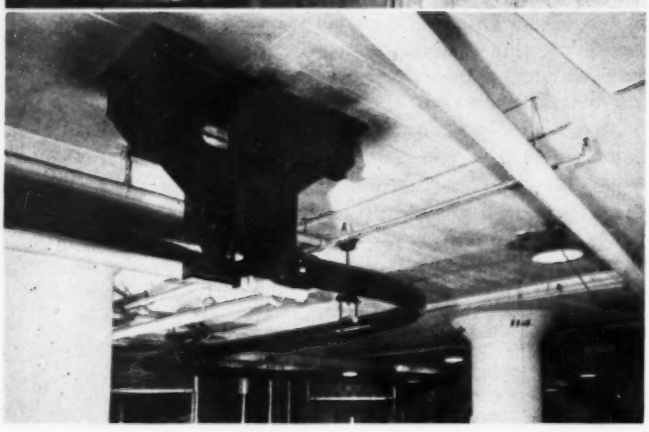


Fig. 1—The view at the top of this group of illustrations shows an expansion bend in a 6-in. main through the Federal Warehouse. Fig. 2—Second from the top is a photo illustrating the method used for cold-springing the expansion loop at the chamber along the 12th Street tunnel known as Sta. 14+52. Note the common screw jack used in exerting the pressure. Also note the supporting timbers in the center of the column for holding it in place during the springing operation. Fig. 3—The photo third from the top shows offset expansion bends in the I. C. C. building, north side, 12-in. and 6-in. sizes. Fig. 4—The bottom view includes the 6-in. main in the Federal warehouse, looking west.

Government Points To

The welded piping in connection with this district heating job includes many practical features. The ideas developed also have applications to smaller types of work

THE U. S. Government's district steam heating system recently completed in Washington, to serve a number of government buildings, including the notable Triangle group, offers many interesting and outstanding solutions as applied to this type of heating.

Some idea may be gained of how extensive is this 300-lb. pressure steam distribution system when the figures reveal that it cost more than one and one-quarter million dollars, exclusive of the steam plant, and involved the installation of more than 42,800 feet of underground steam and return lines ranging from 3 in. to 18 in. size high pressure steam main, and 1¼ in. to 10 in. size condensate return and drip mains. The weights of materials used give an idea regarding the magnitude of the installation. Approximately weight of strictly piping materials is in excess of 2100 tons, while the structural steel members for piping supports, anchorage and alignment guides weighed over 226 tons. The steel for alignment guides, anchorages, clamps, gussets, etc., weighed over 145 tons and the insulation protector saddles, pans and slide bases weighed approximately 17 tons. In all, the total weight of the piping installation complete, exclusive of insulation and conduit, is about 2500 tons, or five million pounds.

This is not the first venture of the Government in district heating, for we find that in 1905 it installed underground steam lines for supplying the Navy, Munitions and other buildings with steam from a public utilities generating plant, and in 1923 it was decided to supply steam to the White House from the boiler plant of the State Department building.

Construction Program
New Heating Practices

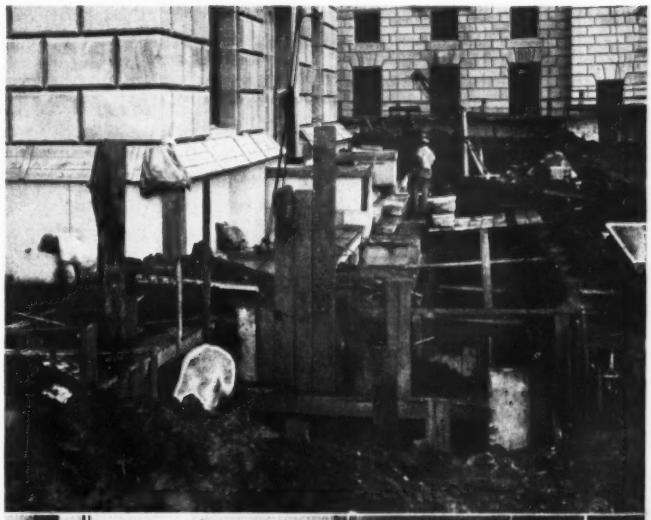
The design and construction of the entire installation assures safety in operation, durability, a minimum of maintenance expenditures and accessibility of the piping system, steel work, steam traps, etc. The entire design and construction is based on sound engineering practice and the latest developments in the piping field.

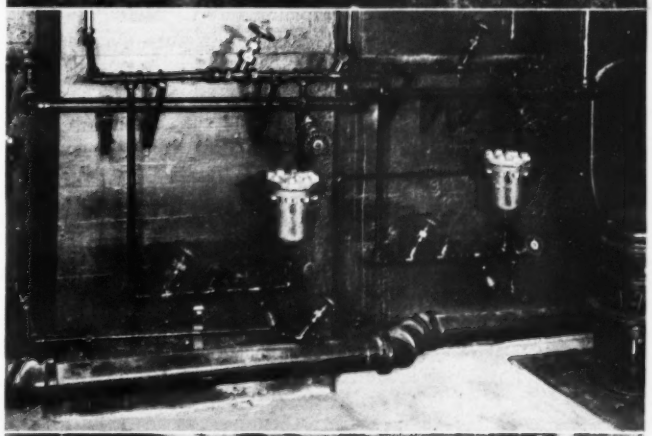
Plans and specifications were prepared by United Engineers and Constructors, Inc., of Philadelphia, Pa., who by an exhaustive study and survey avoided any really difficult problems as to interferences, such as sewers, water and gas mains, power, telegraph and telephone conduit and the underground trolley system which is in use in Washington.

Many new and interesting features are to be found in this project. Tee connections consist of tee welds stress relieved as specified, and after the passing of prescribed tests, reinforced by means of a forged steel saddle of similar design to tank saddle flanges shaped accurately to fit both curvature of the main and the branch connection. This saddle was slipped over the branch main and welded to it and the main line. Fittings such as these produced an exceedingly neat and substantial job.

Wherever possible, welds adjacent to changes in direction of all pipe lines were avoided. This was accomplished by means of short radius bends made in random lengths of pipe. In many cases a number of such bends were made in a single length of pipe for locations where several changes in direction occur in a short distance. This procedure not only eliminated many welds in difficult locations, but also decreased the amount of the welding to be done. At the changes in direction where anchorages occurred, standard welding elbows were employed. Anchorage was obtained with this type by the use of rolled steel anchor shoes, fitting both the inner and outer curvature of the fittings. These were welded to the fittings and also to the structural anchorage steel.

Welding was employed, wherever possible, for line joints, for the assembling of structural steel supports, anchorages and guides and in the fabrication of special fittings, such as manifolds, etc., of which a considerable number were required. In all cases where the work could be revolved the shielded arc method of welding was





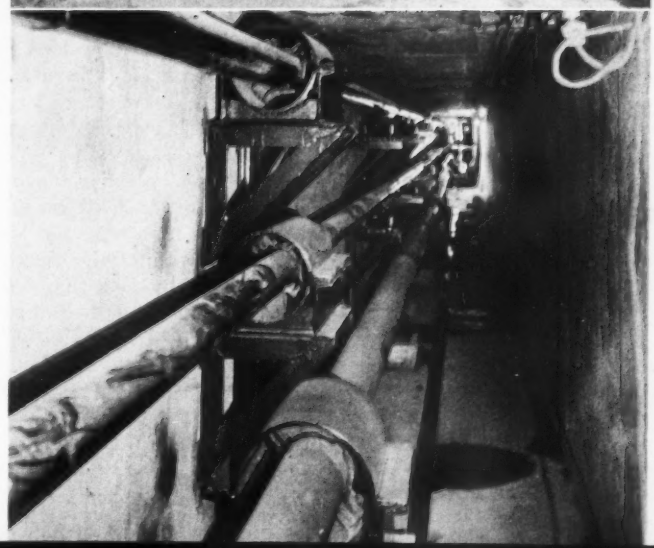


Fig 5—The top view here shows the excavation for the conduit from the I. C. C. building to the Post Office. The chamber in the foreground is the final excavation in the entire job. Fig. 6—A battery of traps are shown in the photo second from the top. These are on the east twall of the boiler room in the Federal warehouse. Fig. 7—Bottom; view of one of the tunnels. Note the method of supporting the several lines of supply and return

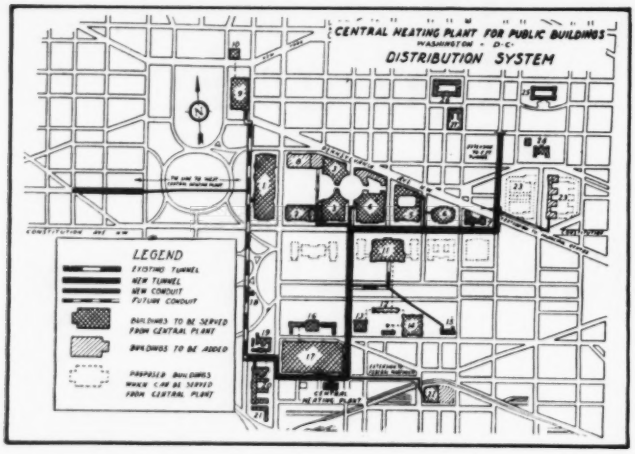


Fig. 8—The new Washington, D. C., district heating system will serve the building indicated on this map including triangle district

employed. For this work four 400-ampere gasoline engine driven arc welding machines, each mounted on a truck chassis, were almost constantly in operation. For position welds, the oxyacetylene method of welding was used.

Under the specification all welds in pipe work throughout had to be stress relieved by means of special portable clay lined furnaces, or other approved method, by means of which the sections of pipe adjacent to the weld were heated slowly and uniformly to a temperature not below 1,100 deg. Fahr. and not over 1,200 deg. Fahr. This temperature was maintained at least one hour per inch of thickness of material thus heated and finally allowed to cool slowly in a still atmosphere. Means had to be provided to control the rate of cooling so that the entire operation of stress relieving and cooling to atmospheric temperature consumed approximately 24 hours. The entire stress relieving operation was accomplished with furnaces and heavy asbestos insulating jackets which were clamped over the heated surface for 24 hours after the furnaces were removed. These were fired by means of gas obtained in returnable cylinders. The stress relieving of tee welds, of which there were a great many, offered a problem not formerly encountered. For these was developed special furnaces with interchangeable heads so one furnace could be made to serve a number of sizes, thereby reducing the number of such units to a minimum. The above procedure produced very satisfactory results in all respects.

WELD REINFORCEMENTS ARE FURNISHED

Other items not commonly employed in welded line construction, are weld reinforcements which were furnished on all sizes of piping 6 in. in diameter and larger. Straight line welds were reinforced by means of rolled steel sleeves split in half, formed to closely fit the periphery of the pipe. Where welding elbows were employed at anchor points the reinforcements of welds consisted of rolled steel straps with not less than four per joint. They were formed to fit the curvature of the pipe and also clear the butt weld which they straddled. This same remark also applied to the reinforcing sleeves. Reinforcing tee welds were mentioned previously.

The requirements regarding alignment of abutting parts to be joined by welding were very exacting. Fifteen percent of the metal thickness of adjacent pieces was the maximum misalignment permitted. Thus when one considers pipe of $\frac{5}{8}$ in. wall thickness there is very little leeway. Some difficulties were encountered in several instances meeting these requirements due to the ends of the pipe being slightly out of round. These defects were corrected by heating the ends with a stress relieving furnace and truing them while in a heated state.

All welders employed on this work had to satisfactorily pass a rigid qualification test supervised by insurance experts before being permitted to engage in welding work. The initial test of all the piping for tightness was made with compressed air while soap suds and water were applied to the welds. After successful completion of this test, a final hydrostatic test at 800 lb. per square inch gauge with a simultaneous hammer test was carried out. Under this test all of the joints had to be drop tight. In all the welding done on this job, not one pinhole leak developed and no welds were rejected.

To each qualified welder an identification mark was assigned, and every weld made was stenciled with the identification mark of the man by whom it was made, to facilitate identification in case of possible defective workmanship.

EXPANSION JOINTS FITTED WITH FLANGES

All expansion joints, valves and other cast steel fittings were furnished with flanged ends. VanStone laps were used on all flanged ends, except such as occurred on steel castings. All VanStone laps were fabricated on random lengths of pipe wherever possible to avoid the use of short pieces and the welding-in of short necks. The laps are 110 per cent pipe thickness after machining, full square corner, of the up-set and rolled type, and with rolled steel high hub pattern flanges. All contact faces of flanged joints have a serrated finish with serrations 1/64 of an inch deep and 32 of these per lineal inch.

Wherever the work was installed under paved street surfaces, concrete tunnels were constructed of 6 ft. 6 in. interior width and 7 ft. clear height, all properly reinforced. In locations where lines were run across park spaces or under sidewalks, as in the case of the main supplying the Federal warehouse, Municipal center and the 18 in. main crossing the Ellipse south of the White House, elliptical-arch reinforced concrete conduit was employed for housing the mains, the arch forms used being of No. 20 gauge black corrugated steel left in place. In a few locations where the necessary space was available, such as in the tunnel running north in Monument Park on the east side of the Washington Monument to Constitution Avenue, the tunnel in 12th Street where it is within the grounds of the Department of Agriculture, and the conduit crossing the Ellipse from 15th Street to 17th Street, N. W., corrugated steel expansion bends were installed in the steam mains to compensate

for expansion and contraction. Slip tube or packless expansion joints were used in all other locations. The expansion bends are housed in concrete chambers projecting from the side of the tunnel or the conduit. Under the specifications double off-set type U-Expansion bends, the creased type of expansion bend or the corrugated type could be furnished by the contractor at his option. While either type of bend in the 18 in. size required 70 ft. of pipe and the cost of the corrugated bends was in excess of the plain double offset bends, nevertheless, considerable saving was effected by the use of the former since the size of the concrete chambers could be reduced, thereby effecting a considerable saving in their cost.

PROVISIONS FOR EXPANSION

A total of 302 slip type and packless expansion joints, in addition to the expansion bends mentioned above, were required to provide for more than 2,000 in. of pipe expansion and contraction.

For the high pressure steam distribution system designed for a maximum of 300 lb. working pressure, in addition to the expansion loops mentioned above, 186 expansion joints of the 400-lb. pressure standard, ranging in sizes from 3 in. to 18 in., were required. Of these, 107 were slip tube type and 79 were packless type.

The requirements for the intermediate pressure work designed for a maximum of 250 lb. pressure were 116 expansion joints, of which 86 were slip tube type and 30 were packless type.

The external guides on the 400-lb. pressure standard joints were designed so removal of either half is possible, thereby fully exposing the stuffing box gland and slip and giving access to it. In the design of all expansion joint external guides, the stuffing box gland studs are accessible for adjustment without disturbing the guide itself. All slip tube expansion joints have lubricating fittings.

All 400-lb. and also 250-lb. pressure standard packless expansion joints are of the diaphram type in which flexible stainless alloy steel diaphragm are used to absorb pipe expansion and contraction. Each diaphragm provides for ¾ in. of movement, limit stops preventing excess travel. Pressure on the diaphragms is transmitted by packing plates directly to the body of the joint. An internal sleeve reduces the friction to that of straight pipe.

Valves for all of the high pressure steam work in sizes 2 in. and larger are of the outside screw and yoke type with ball-bearing yokes. Valves 8 in. and larger have the hairpin type by-pass. Smaller valves are of the Y pattern. For intermediate pressure work the larger valves are of the outside screw and yoke type. Small valves are of the same type but of different material.

The various high pressure trap installations throughout the job required 19—¾ in., 11—1 in. and 106—1¼ in. traps. All of these are of the inverted bucket type with forged steel body and bonnet, and trimmings of non-corrosive steel. All traps were installed with by-pass connections, strainers and blow-out connections ahead of trap inlet. Drip pockets were provided in steam mains at all trap and drip points. Wherever possible these pockets were forged as an integral part of the main or cast integral with expansion joint bodies.

All of the buildings served by the steam distribution system are equipped with steam pressure reducing stations. Among these are three two-stage stations designed to reduce 300 lb. initial to 85 lb. in the intermediate and 5 lb. in the final stage. The single stage stations, of which there are eight, are required to reduce the initial pressure to between 75 and 100 lb. depending on the location.

The largest capacity requirement is in the Bureau of Printing and Engraving where 90,000 lb. of steam are required per hour at 140 lb. pressure. All pressure reducing stations are provided with two or more reducing valves in parallel to assure flexibility due to fluctuating steam demands.

BY-PASSES AT REDUCING STATIONS

All reducing pressure stations are provided with by-passes, basket strainers, high and low pressure combustion and alarm and pressure gauges, relief valves, steam traps and blow off piping. The reducing valves are of the auxiliary exterior pilot operated type. The pilot valves are supplied through a system of pilot piping maintained at a uniform operating pressure. In the case of two-stage stations these piping and pilot valves are interconnected to permit taking up automatically the entire pressure reduction by either stage if one of the stages should fail. Each reducing station was solidly mounted on structural steel framing secured to the masonry construction of the buildings.

Steam flow meters of the recording and integrating type were installed in all of the buildings served, likewise at 6th and E Street where connection is made to a present system of steam distribution. Since it is necessary to accurately record steam flows over the full range, that is from 0 to 100 per cent flow, to accomplish this two separate recording instruments are used in each

(Continued on Page 148)

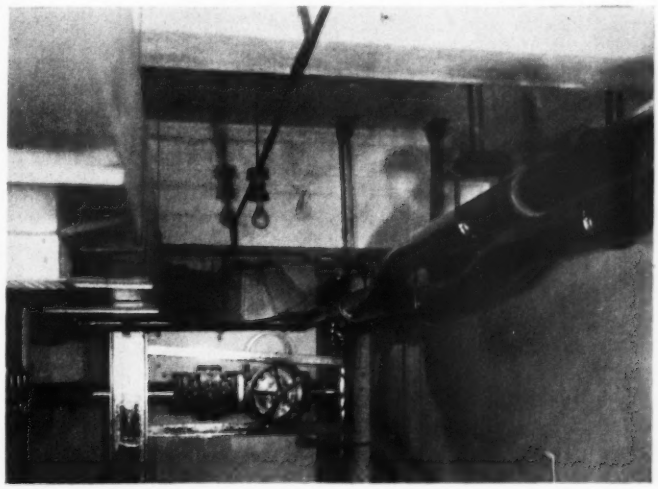


Fig. 9—This view shows an 8-in. steam main entering the Department of Commerce building, one of group heated by system

This is a subject in which all plumbers should be vitally concerned both to protect public safety and to promote their work of this type

By Wm. W. Stevens

Two Reasons for

If you should sit down and think about the subject of relief valves for a few minutes, there would occur to you any number of reasons and arguments for selling relief valves for water heating systems. However, in this article, we are concerned mainly with two which stand out as being fundamental and important both from the viewpoint of the public at large and the plumbing contractor.

In the first place, as is indicated more definitely in the following paragraphs, it is the plumbing contractor's responsibility to promote safeguards against the explosion of range boilers by virtue of the fact that he is trained in this work and is in a position to detect and advise where danger exists. This responsibility exists purely from the angle of protecting public life and property.

The second outstanding reason is that there is a widespread lack of adequate protection and this presents a large potential market for the sale of temperature and pressure relief valves. This is a subject which very logically can be made the basis of a campaign or survey in your locality, to determine the condition of your prospects' plumbing equipment. It is an entering wedge, for what home owner is there who at one time or another has not had an evening's entertainment spoiled or disturbed by wondering if he turned off the tank heater at home. In the case of automatic heating equipment, a relief valve merely serves as one more safeguard, the desirability of which cannot be questioned.

The function of temperature and pressure re-

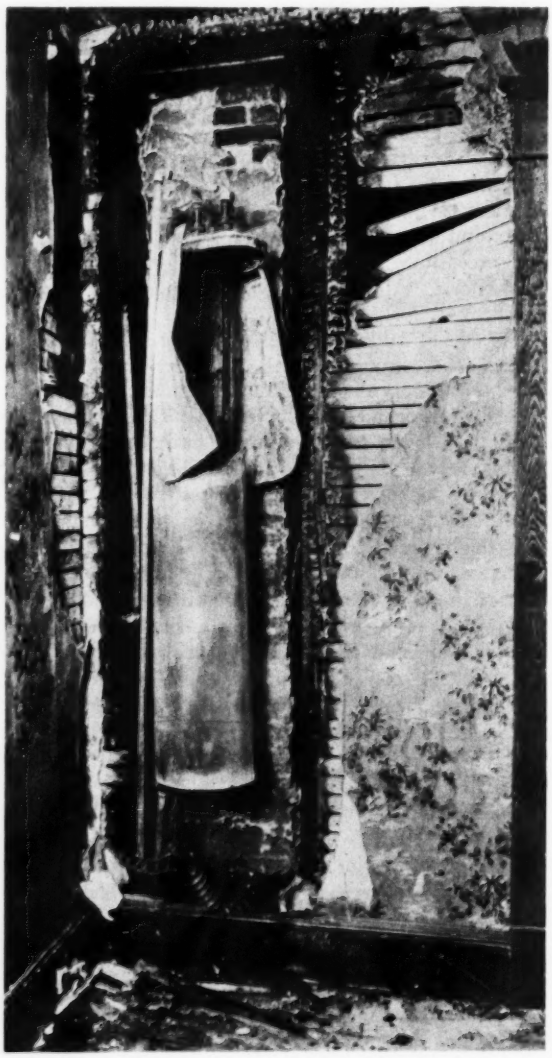


Fig. 1 — This illustration shows what can happen to a storage tank when it explodes because of no temperature and pressure relief

lief valves is outlined in the following discussion which answers a question recently submitted to us. Although this discussion was covered in a recent issue, we feel that the subject justifies repeating here because of its importance and because of the thorough explanation it gives of explosion causes. It points out definitely why temperature must be considered in guarding against the violent rupture of storage tanks:

"A and B are at variance in opinion. A claims that it is impossible to have an explosion with a domestic hot water storage tank unless system is closed (having either check valve or pressure reducing valve) on street side of storage tank.

"B claims, so far as explosion is concerned that there is no difference between a closed system with pressure relief valve operating at 125 lb., and open system where main pressure is 125 lb., if steam is generated and both tanks due to age, or condition suddenly open up. What is your opinion?

"If B is right, why should not the plumber be vitally concerned in seeing that his customers have proper protection."

Selling Relief Valves

In considering this subject, there are several angles to keep in mind. In the first place, as you know when water is at atmospheric pressure, or at 14.696 lb. per sq. in. absolute pressure, or zero lb. per sq. in. gauge pressure, it boils at 212 deg. Fahr. When water is at, say, approximately 10 lb. per sq. in. gauge pressure, or 24.69 lb. per sq. in. absolute pressure, the boiling point is 240 deg. Fahr. Again, when water is at 125 lb. per sq. in. gauge pressure, or 139.696 lb. per sq. in. absolute pressure, it does not form steam until it reaches a temperature of approximately 353 deg. Fahr.

Suppose the city water pressure in a range boiler is 125 lb. per sq. in. gauge, and suppose the heater has been operating long enough so that the temperature is, say, 240 deg. Fahr. By reference to a steam table, we see that at this temperature, 240 deg. Fahr., water will not form steam unless the pressure in the boiler is dropped to approximately 10 lb. per sq. in. gauge, or 24.97 lb. per sq. in. absolute pressure. Accordingly, there will be no steam in the range boiler at 240 deg. Fahr. when the pressure in the boiler is 125 lb. per sq. in. gauge. However, assume that the boiler ruptures for one reason or another, at 125 lb. per sq. in. pressure with a water temperature of 240 deg. Fahr. With the boiler ruptured, the pressure of the boiler immediately drops to that of atmospheric pressure, (zero lb. sq. in. gauge, or 14.696 lb. per sq. in. absolute). This atmospheric pressure is 10 lb. per sq. in. below the pressure at which steam forms when the water is at 240 deg. Fahr. The result is that upon this reduction of pressure to atmospheric pressure, the water in the boiler immediately bursts into steam and this is accompanied with violence.

If there is 125 lb. gauge pressure in a water heating system, due either to its being a closed system with a pressure relief valve, or to its being an open system where the main pressure is 125 lb. per sq. in. and if the temperature of the water is raised to the point at which steam is formed at this pressure, namely 353 deg. Fahr., a sudden rupture in the tank will cause a violent explosion regardless of the system under consideration. In other words, the system will have no influence on the intensity of the explosion provided it permits a pressure of 125 lb. per sq. in. and a correspondingly high temperature above that at which water flashes into steam when at atmospheric pressure.

In order to safeguard against these conditions, it is customary to install temperature relief valves so as to prevent the water from reaching a dangerously high temperature.

One difference between a closed system at 125 lb. per sq. in. pressure and an open system where the main pressure is 125 lb. per sq. in. is that in the closed system the pressure usually is increased when the water is heated due to the expansion of the water. In an open system, water expands back into the supply main and the pressure is maintained at 125 lb. per sq. in. Where the

Most home owners do not appreciate that the large store of energy released can easily cause injuries or deaths of persons on neighboring premises and that if negligence can be shown, the owner might become liable for big damages

water storage tank is in a weakened condition due either to corrosion or some other cause, the increase in pressure, as a result of the expansion of water in the closed system, may be just sufficient to bring about the failure of the tank before the pressure relief valve is brought into operation.

This is a subject in which all plumbers should be vitally concerned. As a result of their knowledge of the potential dangers, it is their responsibility to promote safeguards against the explosion of range boilers. Aside from this public protection angle there are the possibilities of plumbing contractors building up their business through the selling and installing of adequate protective devices for water heating systems.

READER COMMENTS ON REPLY

"Thanks for your very complete answer to my question on explosion. Since your letter I have had the opportunity of seeing the new National Association of Master Plumbers code which calls for the very thing you recommend, namely, temperature control where system is open and temperature and pressure where system is closed.

"Since this subject seems to be so little understood it might be well for DOMESTIC ENGINEERING to straighten plumbers out so that we can have an opportunity to increase our business and give the customer real protection.

"Inasmuch as most fire insurance policies do not cover insured in case of explosion unless accompanied by fire, we certainly have a real menace in every home not properly equipped."

The plumbing code of the National Association of Master Plumbers, adopted at New Orleans, La., June, 1933, provides in Section 73. Relief Valves: "Wherever a check valve is installed on the cold water supply pipe between the street main and the hot water storage tank and/or heater there shall be installed on the hot water distributing system a suitable pressure relief valve and suitable means shall be taken on the hot water system to prevent the heating and storage of hot water heated to a higher temperature than boiling point at atmospheric pressure (212 deg. Fahr.).

This says essentially the same thing outlined in the foregoing paragraphs.

The accompanying picture, Fig. 1, shows a range boiler literally blown to pieces. The house was badly wrecked. The cause of the explosion however, was so unusual, that one would hardly guess what it could have been. Generally these explosions are brought about by the closing of all means of expansion and the continued application of heat from whatever source of heat is used for heating the boiler.

In this instance, however, the boiler was located in an unoccupied house, and the kitchen range to which it was connected had not been in use for many months.

The story back of the explosion is that a fire started in the closet in which the boiler was located, and it was the heat thereby generated that caused it to blow up.

The supply to the boiler had been closed effectually closing all means of expansion for the boiler. Just how much water was left in the boiler was not known, but that it had not been drained was certain.

The heat produced by the fire had been so intense that steam had formed inside the boiler, and with no chance to expand through the supply line to the boiler, and with no relief valve protecting it, the natural result was the explosion that took place.

Reference to the illustration will show that the boiler must have been surrounded by the fire.

Perhaps such a condition of affairs as this may never again come about within our experience. At the same time, it could not have happened if the boiler had been provided with a relief valve.

Time was when practically no attention was paid to the protection of life and property by the use of this safety device on the range boiler. We know better now, however, and this story that we have just told, merely adds one more bit of evidence to the need of this sort of protection for every such installation.

Other examples of explosions and the dangers due to the lack of relief provisions on water heating equipment in homes are cited as taken from a recent issue of The Locomotive of The Hartford Steam Boiler Inspection and Insurance Company:

The fatal explosion of a water heater in a residence at Conshohocken, Pa., early in October last year differed very little in essential detail from the many accidents to similar equipment that are constantly coming to our attention. However, in killing a young girl who was some distance from the boiler, it brought up a point that most home owners do not appreciate, namely, that the large store of energy released by such an explosion could easily cause injuries or deaths of persons on neighboring premises, and that if negligence could be shown the owner might become liable for damages far in excess of the loss on his own property. The heater stood in a lean-to kitchen at the rear of the home. Of the three persons who were in the room when the ex-

(Continued on Page 148)

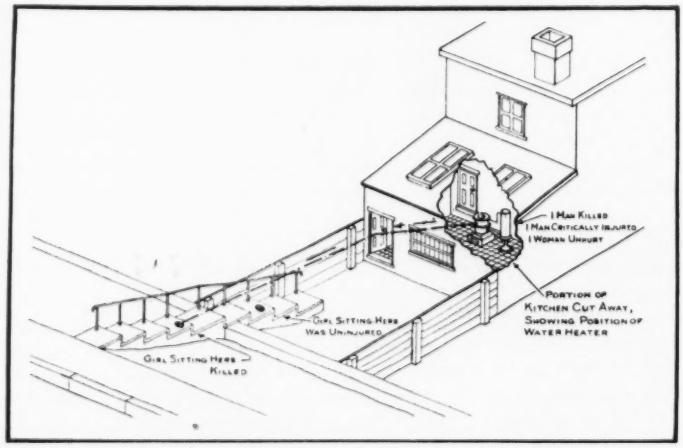
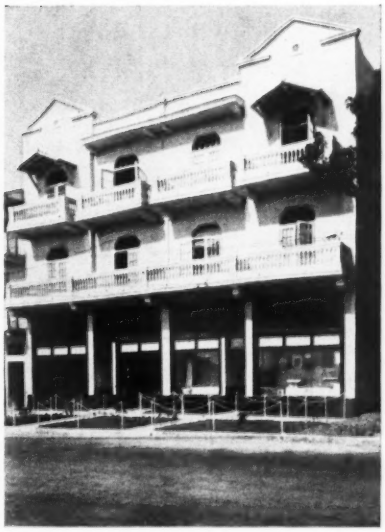

1 Man Killed
1 Man Critically Injured
1 Woman Unhurt
Portion of Kitchen Cut Away, Showing Position of Water Heater
Girl Sitting Here Was Uninjured
Girl Sitting Here — Killed

Fig. 2—Diagram of the scene of an accident resulting from a water heater explosion the cause of which was traced to no relief provision on system

Plumbing in the Panama Canal Zone

Above: E. J. O'Neill, Lavelle Rubber Co., Chicago, left, and John H. Schlenz, president Central American Plumbing Supply Co. Picture taken in Panama



This supply company's Panama building is shown to the right

FAR away places always hold a great amount of interest especially when we learn that they contain people who are engaged in work similar to our own. Therefore, we were all ears and were primed with all sorts of questions the other day when E. J. O'Neill of Lavelle Rubber Company dropped in at this office and informed us that he had just returned from a periodic trip to Panama. Naturally, one of our first questions was in regard to how they sell and install plumbing equipment down there. In Panama City, Republic of Panama, there is the Central American Plumbing Supply Company. The main building is shown in the above. John H. Schlenz, originally from Kankakee, Illinois, is president. It is interesting to learn how he came to locate in Panama. In Kankakee he worked for Jack A. Blatchford and in 1900, he finished learning his trade. From Kankakee, he went to Hot Springs, Arkansas, where he worked on the Arlington Hotel. Later he worked on the forty-two story L. C. Smith building in Seattle, Washington. At that time, there came a call for American plumbers in the Panama Canal Zone. Accordingly, Mr. Schlenz went to Panama in 1906 and worked there during the building of the Panama Canal. It will be remembered that the American occupation of the Canal Zone began on May 4, 1904, and in the eleventh year after that, the Canal was opened. The first ocean steamer passed through on August 3, 1914, and on August 15, 1914, the Canal was opened to commerce. The official and formal opening of the Canal was proclaimed by the President on July 12, 1920.

C. R. Wright, mgr., left, and L. B. Thompson, office mgr., in front of the Colon branch

The illustration at upper left shows Mr. Schlenz in Panama talking to Mr. O'Neill. Mr. Schlenz is at the right. This company has a branch at Colon and at the left is, left to right C. R. Wright, Manager and L. B. Thompson, Office Manager in front of that office. Incidentally, Mr. Wright formerly came from Elkhart, Ind.

It was pointed out that these companies handle all American fixtures and find a considerable demand for colored ware with chromium finish. Mr. O'Neill reports that there are fine residences in Panama with a consequent demand for modern plumbing facilities.

Normally, one who is not acquainted with the climate in Panama would expect it to provide a big market for air conditioning. However, when this was suggested to Mr. O'Neill, he pointed out that he did not believe there was a single fan in Panama and in support of his statement pointed to the vigorous way in which Mr. Thompson's tie at the left is blown. Mr. O'Neill said that wherever there is shade there is a breeze. Added to this, they arrange their work so that it is done during the more comfortable parts of the day. They are only open from 8:00 to 11:30 in the morning and from 1:45 to 4:30 in the afternoon, with plenty of time for rest.

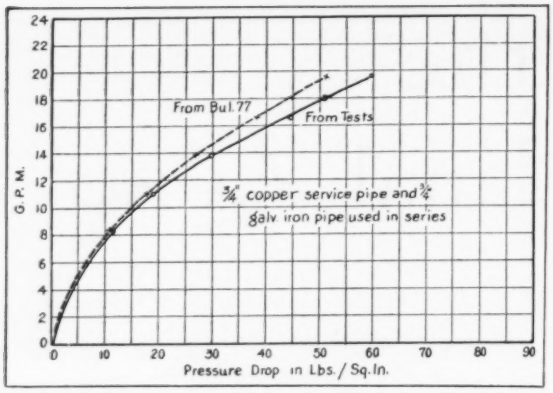


Fig. 1—These curves show how well actual and theoretical values check

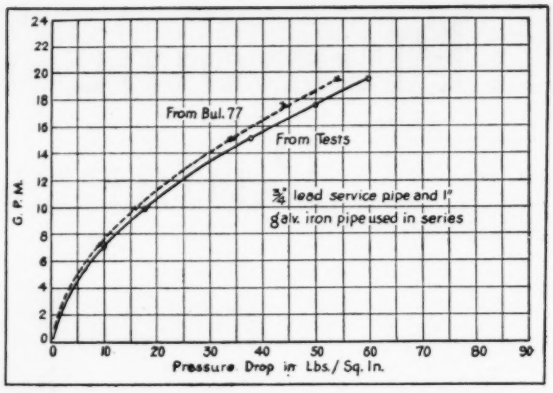


Fig. 2—"A difference between actual and theoretical drop is desirable"

How to Size Water Supply Piping for Homes

By F. M. Dawson

Professor, Hydraulic and Sanitary Engineering, University of Wisconsin

In order to give a clear idea of how the data given in the accompanying charts and tables should be used, a simple problem will be worked out on a house service pipe. In the laboratory of the University of Wisconsin there is an experimental set-up of a house water-supply system which includes three 80 foot lengths of house service pipe with various fittings. Fig. 5 shows this set-up in detail. No. 1 line contains a length of ½-in, lead and ½-in. galvanized iron. No. 2 line has ¾-in. copper and ¾-in. galvanized iron. No. 3 line has 1-in. copper and 1-in. galvanized iron.

Table I gives the equivalent length of pipe for various kinds of fittings of different size. It will be noted that the equivalent length for various fittings is greatly increased where pipe ends are unreamed. *Table II* gives the data by means of which a length of pipe of one size can be converted to equivalent length of pipe of any other size; that is, to a length of pipe of any other size such that with the same rate of flow, it will produce the same pressure loss. For example, to equal the friction loss in 100 feet of ½-in. pipe, for any given rate of flow, it takes 421 ft. of ¾-in. pipe or 1340 ft. of 1-in. pipe.

Assume that the pressure in the 6-in. water main is 85 lb. per sq. in. and that the line is approximately level. Assume that the maximum rate of discharge from fixtures due to simultaneous use is 20 gallons per minute. What pressure is available on the house side of the meter of line No. 2? The simplest solution to this problem is to convert all the pipe and fittings to equivalent lengths of ¾-in. copper pipe and ¾-in. galvanized iron pipe. With the given rate of flow the pressure loss can be obtained from Fig. 3 and 4. Below is given the equivalent length of pipe as obtained from the tables.

Pipe or Fitting	Equivalent length of ¾" Copper pipe
29.0 ft. of ¾" copper pipe	29.0
¾" corporation cock	8.9
¾" curb cock for copper	2.0
Total	39.9

	Equivalent length of ¾" Galvanized Iron pipe
41.0 ft. of ¾" G.I. pipe	41.0
¾" gate valve	.8
Meter with ¾" connections	14.0
Total	55.8

From Fig. 4, the pressure loss through 100 ft. of equivalent length of ¾-in. copper pipe for a discharge of 20 gallons per minute is 48 lb. per sq. in., or $\frac{48 \times 39.9}{100} =$ 19.2 lb. per sq. in. for 39.9 ft. From Fig. 3 the loss through 100 ft. of ¾-in. galvanized iron pipe is 44 lb. per sq. in. for the same rate of discharge or 24.5 lb. per sq. in. for 55.8 ft. of pipe. Therefore, the total loss is 437 lb. per sq. in., and the pressure at the house side

of the meter is 85—43.7=41.3 lb. per sq. in. This is the pressure that is available to lift water up to the various fixtures and force it through the faucets and cocks at the required rate.

If this problem were worked out for line No. 1, which has 29 ft. of ½-in. lead pipe and 41 ft. of ½-in. galvanized iron, for a rate of discharge of *only 10 gallons per minute* the available pressure would be 31.4 lb. per sq. in.

The pressure loss given in the tables is for individual fittings and sizes of pipe. The question arose as to whether the total pressure loss in a long length of pipe containing various fittings and pipe was the same as the sum of the losses in the individual pipes and fittings when they are tested alone. To answer this question it was necessary to make test runs on the three service lines in the laboratory and see how closely the actual pressure drop, as determined by gage measurements, for various rates of discharge, compared with drop determined from the data given in the curves and tables by the equivalent pipe method.

The investigation was conducted by running water through a line at a uniform rate. This was determined by measuring the discharge in a calibrated tank over a period of time. Pressure gage readings taken at the 6-in. main and discharge ends of the particular span under investigation determined the actual pressure drop over the span.

The equivalent length of pipe previously had been computed for each span. With the value of the actual discharge and the computed equivalent length of pipe, the theoretical pressure drop was determined from the curves. Graphical sketches then were made of the relation between the actual and theoretical pressure drop. Some eight different series of tests were made; Figs. 1 and 2 indicate the results obtained for two of the series.

The curves in Figs. 1 and 2 show how well the actual and theoretical pressure drop, as determined from data given in curves and tables, check. For instance, as shown in Fig. 2, for a discharge of 10 g.p.m. the actual pressure drop was found to be 15.5 lb. per sq. in, while the value calculated from information given in this article was 17.5 lb. per sq. in. or 11 per cent greater. This percentage variation diminishes to a value of zero as the discharge decreases to zero. Such a difference between actual and theoretical pressure drops is desirable, since the pipe and fittings of the set-up are comparatively new and thus the bulletin data provides a margin of safety to take care of diminished flow when the pipe becomes old.

Thus by the use of the rational method of design presented it is possible to design piping accurately and to be sure that it will give good service. No guess-work or rule-of-thumb methods need be employed.

ANOTHER PRACTICAL PROBLEM

So far our discussion has considered the discharge and friction loss in pipes which have a constant flow throughout their entire length, such as house service pipes. Knowing the pressure available at the street main and the flow and pressure necessary at the house side of the meter, it is relatively simple to design a service pipe so that the required conditions will be satisfied. However, it is a little more difficult to design a piping layout containing various branches so that discharges from the various branches will be satisfactorily balanced against the friction losses.

In order to bring out all the points involved in the design of a system of branching pipes, an actual problem recently submitted to the writer will be discussed in detail. Fig. 6 shows a layout of this problem together with information regarding discharge and friction loss. With the length of the main pipe given as shown in the sketch, it is desired to obtain a discharge of 500 gallons per hour from ten different points along the pipe. Sprinklers are to be connected at these points, and 15 lb. per sq. in. of pressure is required to operate these sprinklers so that they will discharge 500 g.p.h. If the pressure at any point is much over 15 lb., the discharge at that point will

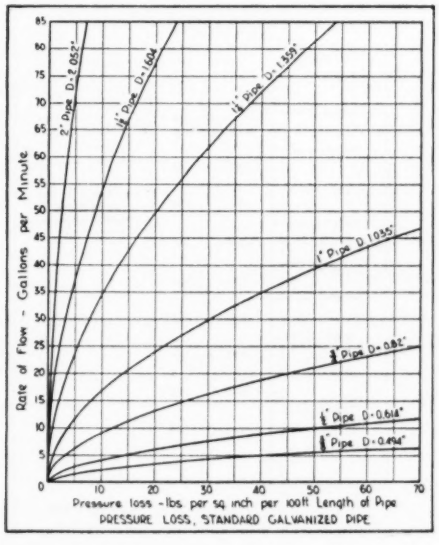

Rate of Flow - Gallons per Minute
2" Pipe D-2.067"
1½" Pipe D-1.604"
1¼" Pipe D-1.359"
1" Pipe D-1.055"
¾" Pipe D-0.82"
½" Pipe D-0.614"
⅜" Pipe D-0.494"
Pressure loss - lbs. per sq. inch per 100ft Length of Pipe
PRESSURE LOSS, STANDARD GALVANIZED PIPE

Fig. 3—This set of curves shows the pressure loss in galvanized iron pipe

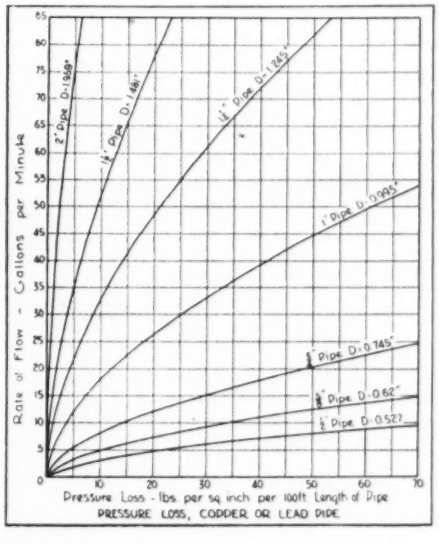

Rate of Flow - Gallons per Minute
2" Pipe D-1.939"
1½" Pipe D-1.481"
1¼" Pipe D-1.265"
1" Pipe D-0.995"
¾" Pipe D-0.745"
½" Pipe D-0.62"
⅜" Pipe D-0.527"
Pressure Loss - lbs. per sq. inch per 100ft Length of Pipe
PRESSURE LOSS, COPPER OR LEAD PIPE

Fig. 4—Pressure loss curves for lead and copper pipe are shown here

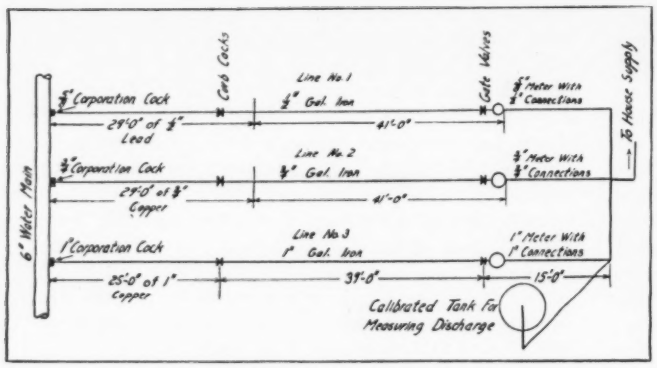


Fig. 5—Diagram of laboratory set-up at University of Wisconsin similar to a residence installation. Reprinted here from June installment for the reader's convenience in reference

be greater than 500 g.p.h., and other sprinklers on the line will be robbed of water. In order to satisfy the conditions as stated, what pressure head will be required at a pump supplying 5000 gallons per hour.

The main pipe is shown as being made up of a series of pipes 3 in., 2½ in. and 2 in. in diameter. This piping undoubtedly was not designed for the use to which it is being put in this problem, as, for instance, the 3-in. pipe should have been continued at least to the first branch point. However, this will not alter the principle which we desire to illustrate with this problem. The friction loss in this length of pipe, with 500 g.p.h. discharging from each of the branches, is obtained by totaling the computed friction loss in each of the lengths between the branch points for the rate of flow taking place in this particular length of pipe.

(Continued on Page 44)

Table I

Equivalent Lengths in Feet of Straight Pipe to Give Same Pressure Loss as Fitting for a Given Rate of Flow.

All Data From Experiments in the Hydraulic and Sanitary Engineering Laboratory, University of Wisconsin, Madison, Wisconsin

Description of Fitting	Nominal Diameter of Pipe in Inches ⅜	½	¾	1	1¼	1½
Elbows						
90 Pipe ends reamed.....	0.8	1.1	1.7	2.2	3.6	5.0
90 Pipe ends unreamed*...	4.8	7.3				
90 Street, Pipe ends reamed*					5.2	6.6
45 Pipe ends reamed.....	0.5	0.7	1.0	1.2	2.1	2.7
45 Pipe ends unreamed*...	4.6	6.5				
Tees						
End to End, Pipe ends reamed	0.2	0.3	0.3	0.4	0.8	1.1
End to End, Pipe ends unreamed*	2.9	3.7				
End to Side, Pipe ends reamed	1.5	1.6	2.5	3.2	5.2	7.1
End to Side, Pipe ends unreamed*	6.6	8.8				
Side to End, Pipe ends reamed*					9.2	9.4
Side Reduction Tees						
Flow end to side, all pipe ends reamed, equivalent pipes same size as side outlet.						
¾ in. x ¾ in.....	2.5	3.2				
1 in. x 1 in.....	2.5	3.5	4.4			
1¼ in. x 1¼ in.....				5.8		
1½ in. x 1½ in.....				5.7	6.6	
2 in. x 2 in.....				5.7	8.5	8.6
Water Meters						
No valves included.						
⅝ in. with ½ in. connect..	2.3	6.7	28.0	90.0	345.0	
⅝ in. with ¾ in. connect..	1.6	4.8	20.0	64.0	245.0	
¾ in. with ¾ in. connect..	1.1	3.4	14.0	45.0	170.0	
1 in. with 1 in. connections	0.7	2.2	9.0	30.0	115.0	
1¼ in. with 1 in. connections	0.4	1.1	4.4	14.0	54.0	
Service Line Fittings						
Compression Stop and Waste.						
¾ in. v ¾ in., poor design.	4.7	14.0	58.0	185.0	715.0	
¾ in. x ¾ in., good design.	1.9	5.8	24.0	77.0	295.0	
1 in. x 1 in.....	1.0	2.9	12.0	38.0	148.0	
Corporation Cocks and Connections						
For Lead and Copper Service.						
⅝ in.....	2.3	6.7	28.0	90.0	345	
¾ in.....	0.7	2.1	8.9	29	110	
1 in.....	0.2	0.5	2.2	7.0	27	
Curb Cocks						
¾ in. for lead service.....	0.6	1.9	8.0	26	98	
¾ in. for copper service...	0.2	1.0	2.0	6.4	25	
1 in. for lead service.....	0.4	1.1	4.7	15	58	
1 in. for copper service....	0.1	0.2	0.8	2.6	9.8	
Valves						
Globe**		19.23	10-15	8-40		35.45
Gate		0.5	0.8	0.9	1.0	1.2

*Experiments are being made at present to obtain values of equivalent length for all diameters of these fittings.

**The loss in globe valves varies widely depending on design. The cheap valves have the higher loss.

Table II

Conversion Table

Equivalent lengths in feet, of pipe to give same pressure loss as 100 feet of other size for a given rate of flow.

Equivalent lengths to give same loss as 100 feet of pipe of size given in first column of table.

	⅜	½	¾	1	1¼	1½
⅜	100	294	1238	3925		
½	34	100	421	1340	5190	11,800
¾	8.1	24	100	320	1230	2,820
1	2.5	7.5	31	100	387	887
1¼	0.7	1.9	8.1	26	100	228
1½	0.1	0.8	3.5	11.3	44	100

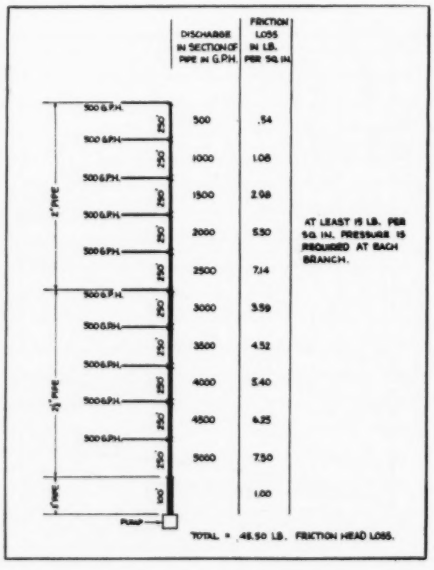


Fig. 6—This is a layout of the second problem discussed in this article

QUESTIONS AND ANSWERS!

1—

TO THE EDITOR:

We would like to have you tell us the size of storage tank and size of coal burning hot water heater necessary to supply 76 lavatories, 22 baths, and 6 showers.

Tenn. H. H. R.

TO THE READER:

It is unfortunate that one cannot tell by looking at a plumbing fixture as to how much hot water will be drawn from it but such is actually the case; fixtures seldom are used at their maximum capacity and the whole question is what percentage of the maximum shall be assumed as probable and likely to be the actual hot water necessary. This percentage will vary with the type of building and the way in which the fixtures are used. For example, in the case in question the fixtures may be assumed to have a normal maximum use of about 20 gal. of hot water per hour for the lavatories, 40 gph. for the baths and 300 gph. for the showers.

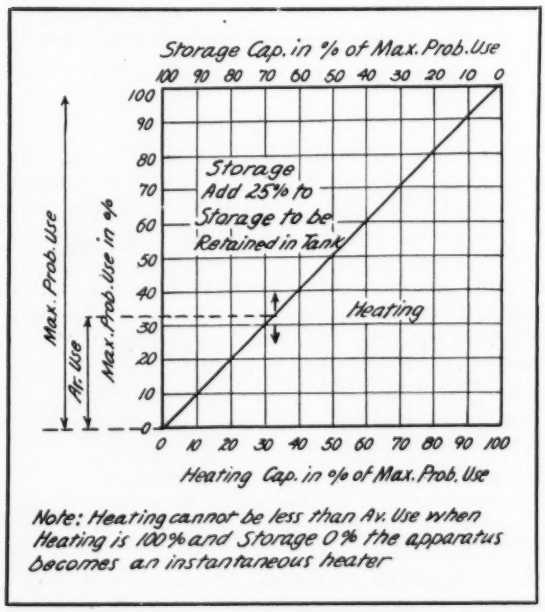


Fig. 1

1. *Simple question on water heating and storage problem shows many conditions which must be met in designing an adequate system. The answer illustrates numerous variables which prevent an exact solution where water consumption is concerned.*

2. *Remodeling job calls for the extension of a pressure hot water heating system to take care of an addition to an existing building. Reader wants to place the expansion tank near the boiler and asks if this is practical.*

The maximums should be reduced to probable use of hot water by multiplying by the following percentages:

Fixture	*Factor of Probable Usage to Multiply by*			
	Club	Hotel	Industrial	Y.M.C.A.
Lavatory	25%	25%	150%	25%
Bath	50%	50%	100%	100%
Shower	67%	33%	100%	100%

It will be noted from the above that the use of water from the same lavatory will vary from 25 per cent of the normal maximum to 150 per cent of the normal maximum or an increase of 600 per cent. For the purpose of this article, however, it will be considered that the fixtures are to be used in an ordinary installation where the usage is about ⅓ of the normal maximum and the maximum hour demand will run double this average. If our reader has anything outside the usual run or has one of the types of buildings mentioned above then he will have to recalculate our computation making the necessary changes as he proceeds.

The normal maximum in this case will be

Lav. 40 gal. × 76 × 0.33½%	1,013 gal.
Baths 60 gal. × 22 × 33⅓%	440 "
Showers 300 gal. × 6 × 33⅓%	600 "
Total average demand	2,053 "
Maximum demand 100% more or	4,106 "

The next question, and a very important one, is how many hours a day will this demand be distributed over. It is unlikely that all this water will be used in one hour; it also is unlikely that the use will be distributed over the entire 24 hours. For example, it will be assumed that there is an hour in the morning and another at night when the maximum is reached and that during the rest of the time the load is average, or less than the average. This gives as a fairly constant requirement about 2,000 gph., and as a peak, 4,000 gph.

If these assumptions are correct, the next step is to divide this into storage and heating capacity. The heating capacity must not be less than the average demand as otherwise the heater will fall behind the load and the water will cool down—in other words the water must be heated on the *average* just as fast as it is used on the *average;* when the peak demand comes along the excess load may be supplied from the storage in the tank. Now the tank storage may be made anything, from water sufficient to supply all of the excess demand when the peak load comes on, down to nothing at all, in which case the heater has to become an instantaneous heater.

The curve shown in Fig. 1 illustrates how, as the heating capacity goes up the storage capacity may be reduced; the scale on the left represents the maximum probable use as computed and the dotted line indicates a case where the average use is 33⅓ per cent. Starting on the left hand scale at 33⅓ per cent and proceeding toward the right until the diagonal line is intersected directly above this point on the top scale may be read the percentage of the "maximum probable use" which must be stored and directly under the intersection on the bottom scale may be read the percentage of the "probable maximum use" which must be heated.

HOW MUCH STORAGE CAPACITY?

In the case being considered here the average use is ½ or 50 per cent of the maximum and applying this to the chart in the same way it will be seen that the storage must be 50 per cent and the heating capacity must be 50 per cent; if it were desired to increase the heating capacity and to reduce the storage say to 70 per cent heating, then we would start on the left hand scale at 70 per cent and above the intersection with the diagonal line it is found that the storage must be 30 per cent.

As it is cheaper to store water than to provide equipment to heat water it is desirable to use as much storage as practical in the case under consideration and this will give

Heating Capacity 50% of 4,000 gal., or 2,000 gph.
Storage Capacity 50% of 4,000 gal., or 2,000 gph.

As water usually is considered to be raised about 100 deg. Fahr. in a heater—50 deg. Fahr. to 150 deg. Fahr. —and as a gallon weighs about 8⅓ lb., the number of Btu. to raise a gallon of water from the entering temperature to the heated temperature will be

8⅓ lb. x 100 F or 833 Btu.

and since a sq. ft., of steam radiation is equivalent to 240 Btu. it will take

833 Btu./240 Btu. or 3½ sq. ft., (approx.) for every gallon of water heated in one hour. For 2,000 gph., the rating on the coal heater must be

2,000 gph., x 3½ sq. ft., or 7,000 sq. ft.,

and the size of grate at a combustion rate of about 8 lb., per hour and an absorption into the boiler of about 8,000 Btu. from every pound of coal burned will be

$$\frac{2{,}000 \times 833 \text{ Btu.}}{8{,}000 \times 8 \text{ lb.}} \text{ or } 25.5 \text{ sq. ft.}$$

As a check on the amount of hot water to be used per day we would point out to our reader that the average person uses about 40 gallons of hot water per day for all purposes including cooking and laundry; without cooking and laundry, the amount falls to around 20 to 25 gal. Therefore, if he can ascertain how many people will have to be served, he can obtain a check on the amount of water he has computed by the fixture method which always is a rather uncertain way of trying to estimate owing to the reasons already explained.

2—

To the Editor:

We have a pressure hot water job where it is desired to extend the building and add 1,600 sq. ft., of radiation without changing the lines in the present building; the extension is to be an overhead hot water installation and

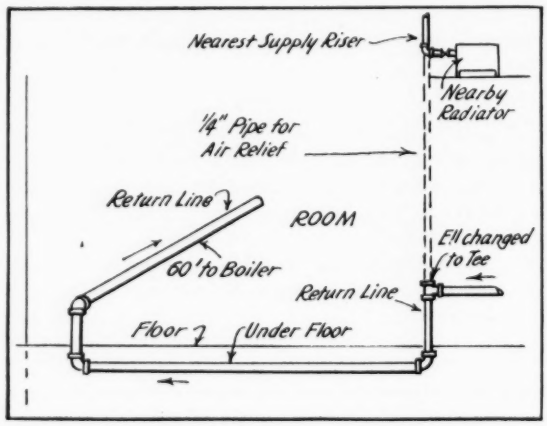


Fig. 2

the boiler is to be enlarged accordingly, the architect suggesting an expansion tank in the attic and a differential at the boiler. If the pressure device is done away with entirely cannot the expansion tank be placed at the boiler?

It also is desired to drop the return from one side of the building under the floor and rise up again on the other side of the room and then proceed about 60 ft., to the boiler; can this be done and still maintain an equal circulation in all lines?

Idaho. W. A. M.

To the Reader:

In reply to the first question about the expansion tank we would state that the whole system may be made a tank-in-basement installation if the reader desires and the same circulation as obtained at present will be attained with the tank in the basement scheme provided the same pressure when the system is hot with the present arrangement is carried on the tank when the system is hot with the tank installation. This may involve a somewhat higher pressure in the tank at all times than ordinarily would be carried. We suggest our reader select the pressure equipment he wants to use and then consult with the manufacturers of it.

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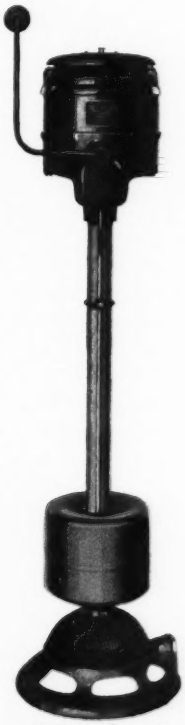

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PENBERTHY PUMPS REMOVE SEEPAGE WATER

In connection with the second question our reader has sent no sketch of just what he intends to do but we draw from the description that the idea is something like that shown in Fig. 2. If this is true there is no difficulty to be experienced with simply dropping the line a short distance so as to pass under the floor but, if the line is to be dropped to a point considerable below the boiler—that is five or ten feet,—there might be a tendency for cold water to accumulate in the bottom and retard the circulation in that particular branch. We assume, however, that the amount of drop is small and the only suggestion we have about making it is that air may accumulate at the point where the lines starts down under the floor.

METHOD USED FOR AIR RELIEF

Just how serious this might be would depend on the pitch in the line, the nearness of other connections which could be used as reliefs for air and so on. If our reader is doubtful about being able to get rid of the air automatically through a nearby branch we would suggest tapping the elbow as shown in Fig. 2 in dotted lines and the running of a small ¼-in., pipe to some riser from above, through which air relief may be obtained. If the pipe is made larger than ¼-in., there may be short circuiting in the water flow but if kept down to the size suggested the short circuiting will be so small that it may be neglected. This pipe should be of non-corrosive metal.

If the above is not clear, or if we have not interpreted our reader's problem in a correct manner, we suggest that a sketch be made of the system in general and just what is intended where it is necessary to cross under the floor, on receipt of which a more intelligent answer and one suited to this particular problem may be formulated.

Questions For READERS

The following question was asked in the May issue, and the following answer is by a reader:

Here is a question for readers suggested by a reader. "What will be the cast iron boiler size to use under the following conditions: 1053 lineal feet of 3½-in. cast iron pipe laid in a horizontal position, one row deep, under the greenhouse beds, is used to heat a greenhouse to a temperature of 55 deg. Fahr. The average temperature of the water in the piping will be 140 deg. Fahr. Hot water is the heating medium and it is desired to select a cast iron boiler of ample capacity to do the work. It s assumed that the figure for the length of pipe is adequate to take care of the greenhouse heating load.

IN reply to the question on greenhouse heating published on page 54 of the May issue I should say that the Btu. transmitted per lineal foot of 3½-in., pipe would be 2.24 per degree of temperature difference between the room and the water; the problem says that the house is to be kept at 55 deg. Fahr. and that the average water temperature is to be assumed as 140 deg. Fahr. This gives a temperature difference of

140 deg. Fahr.—55 deg. Fahr. or 85 deg. Fahr.

and the transmission of heat per lineal foot of pipe under this condition should approximate

2.24 Btu. × 85 deg. Fahr. or 190.4 Btu.

With 1,053 lineal feet of 3½-in., pipe in the greenhouse the total Btu. transmitted would be

1,053 × 190.4 Btu. or 200,491.2 Btu. per hr.

While any long runs of feed pipe in the greenhouse itself would constitute heating surface and presumably have been included in the figure of 1,053 lineal feet quoted, there also is some piping in the boiler room which has a loss of heat and 10 per cent will be allowed for this item as the problem says the boiler should be amply large. No 25 per cent excess capacity for heating up in the morning will be considered however, as this load does not exist in the greenhouse, the heaviest load occurring at night and on cloudy days when no sun effect is received.

FIGURING TOTAL BOILER LOAD

Then the total boiler load with 10 per cent pipe loss in the boiler room will be

200,491 Btu. plus 10 per cent of 200,491 Btu.
or 220,540 Btu.

Now greenhouse chimneys are notoriously low so that a high combustion rate can hardly be expected and it will be assumed that 5 lb. of coal per square foot of grate will represent about the maximum combustion rate which may be obtained; also that each pound of coal burned will transfer to the water approximately 8,000 Btu. after all other losses have been deducted. Under this condition the amount of heat delivered into the water from each sq. ft. of grate surface will be

8,000 Btu. × 5 lb. or 40,000 Btu.

so that, in order to supply a maximum of 220,540 Btu. to water in the boiler, the grate area required would be

220,540 Btu./40,000 Btu. or 5.5 sq. ft.

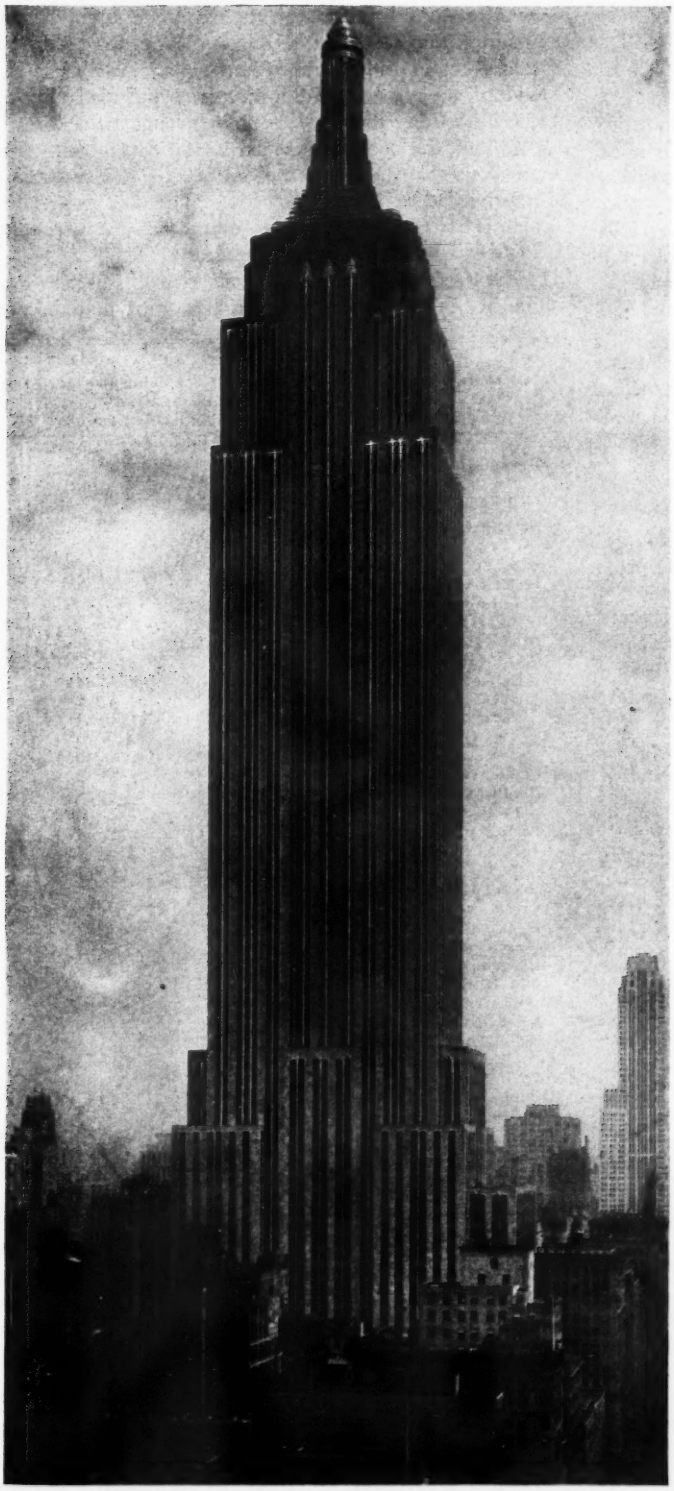
The boiler rating of course would have to be at least the total number of Btu. to be supplied divided by 240 Btu. in order to reduce this to equivalent square feet of direct steam radiation (edr.), or by 150 Btu. to reduce to equivalent square feet of water rating, but if the boiler rating thus secured has a lesser grate area than the 5.5 sq. ft. calculated above, it would be better to increase the boiler size arbitrarily until the grate area calculated were included regardless of what this might bring the boiler rating up to. The rating, therefore, should not be less than

220,540/240 or 925 sq. ft. (steam)
or
220,540/150 or 1,475 sq. ft. (water).

How Would You Answer This Question?

When water is pumped out of a shallow well, with an ordinary so-called suction pump, is it a fact that the water is lifted out?

Answers based upon your experience, suitable, will be paid for and published in the September issue.



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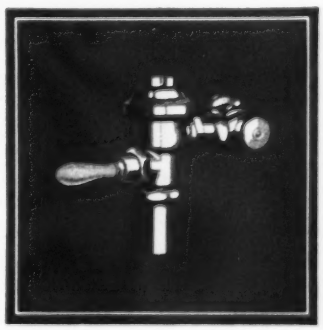

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Piping—

(Continued from Page 38)

The lowest pressure in the line during the simultaneous discharge will be at the last branch point; and this must be at least 15 lb. per sq. in. Of course, if the pressure at the last point is 15 lb., then the pressures at the other branch points nearer the pump will be *greater* than 15 lb. The pressure at the center branch point, for example, will be 15 lb. plus the friction loss in the pipe between the last point and the center one, and this amounts to 17.24 lb. (according to friction losses given in Fig. 1), or a total of 32.24 lb. Therefore, in a like manner, the head which the pump must maintain during the simultaneous discharge of the ten sprinklers is 15 + 45.50 (total friction loss), or 60.50 lb.

PROBLEM TO MAINTAIN DISCHARGE

The problem is now to maintain a discharge of 500 g.p.m. at each of the sprinklers. Obviously, if the pressure is greater than 15 lb., as it is at every one but the last sprinkler, the discharge will be greater than 500 g.p.h. This will result in a large discharge through the sprinklers near the pump and a small discharge at those located farther away on the pipe. This means that at points where the pressure in the main line is much greater than 15 lb., friction loss will have to be introduced into the branch pipe line to the sprinkler. A convenient way of doing this is to install valves and so throttle the flow from the main line to the sprinkler that the pressure is reduced sufficiently to deliver only the required 500 g.p.h. At the center point, the pressure was 32.24 as computted above. Now in order for this sprinkler to deliver only 500 g.p.h., it will be necessary to reduce the pressure from 32.24 lb. to 15 lb. by throttling the flow to this sprinkler with a valve located between the main pipe and the sprinkler. The pressure at each of the various branch points is different, and, therefore, the throttling at these points also must vary.

PRESSURE LOSSES IN HOUSE FIXTURES

Like the sprinklers mentioned in the problem above, all house fixtures require a certain pressure to produce the desired discharge. The rate of discharge required or desired at various fixtures was given in a table in the last article of this series (DOMESTIC ENGINEERING, June, 1934, Page 46). However, since the exact rate of discharge varies, the pressure loss in the fixture also varies, therefore, it is more convenient to express the pressure loss occurring in these various fixtures in equivalent lengths of pipe of various diameters. Table III gives the values of equivalent pipe for various basin cocks, faucets, and other fittings.

A great deal of variation in pressure loss was found in some of these fittings, particularly in compression stop and waste valves. Inspection of this type of valve will usually disclose that those of poor design have small and crooked water passages. Naturally, the loss through compression faucets is much greater than that in the ground key type, due to the crooked and constricted passages.

The pressure loss through the basin cocks and faucets at many fixtures often constitutes a large part of the total loss found in interior water piping systems. The standard angle stop and tail-piece was included with all basin cocks, and the pressure loss through these as well as through the cock is included in the data given. The data shows that the addition of self closing devices usually further increases the friction loss. The data as given in Table III is the result of a large number of experiments and gives average results for the fixtures listed.

Editor's Note: The first article of this series was published in the June issue beginning on page 46. Additional articles on this same general subject are scheduled to appear in early issues. It should be pointed out that these articles are being designed so that each will be complete in itself. However, to get the most value out of the series, all of them should be studied in the order presented. It will be noted that some of the charts published in connection with the earlier article are reproduced at the beginning of this article. This was done for the sake of convenience and so as to make this article complete.

It will be of general interest to know that Professor Dawson, the author of this article has just completed the supervision of a fourth short course for plumbing supervisors, inspectors, instructors, master plumbers and all who are interested in public sanitation. It was held for a period of six days, from June 18 to 23. One of the main subjects discussed was that of water supply piping and systems.

Table III

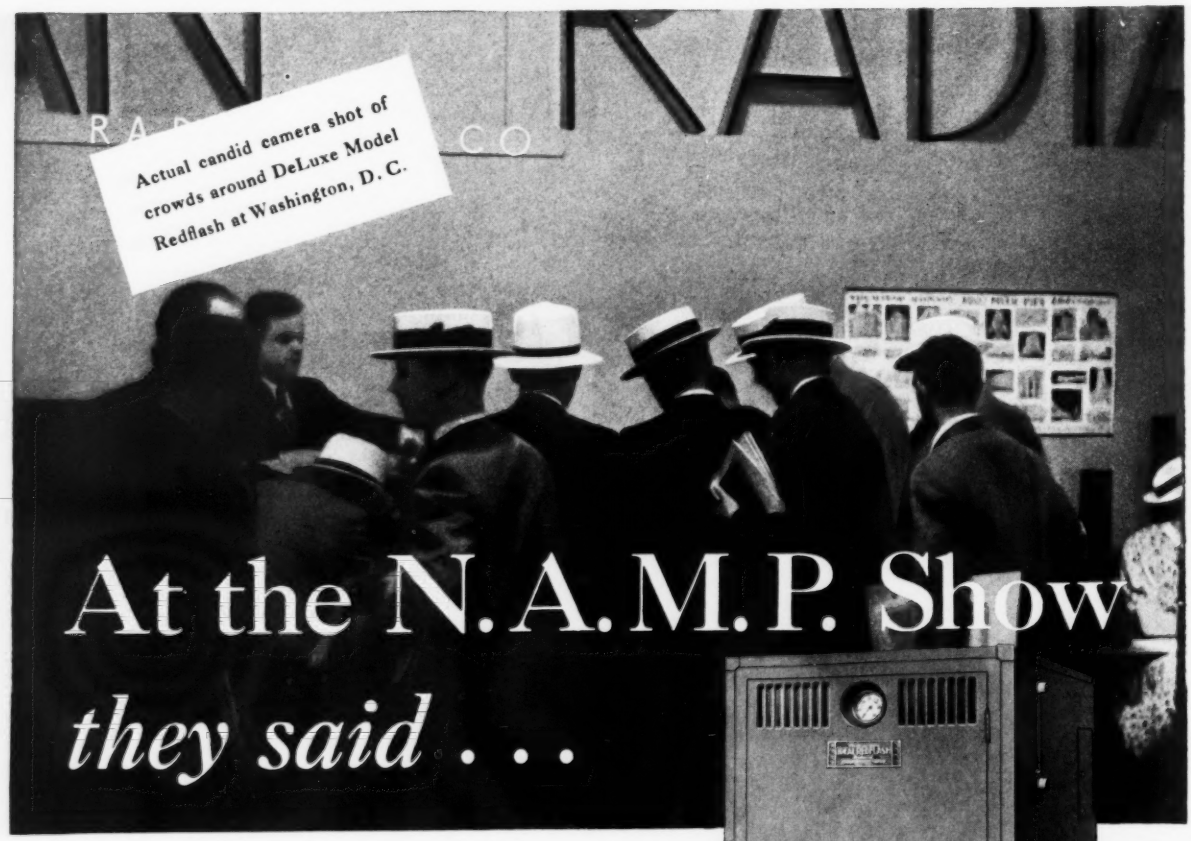
Equivalent Length of Pipe in Feet to Give Same Pressure Loss as Fitting for a Given Rate of Flow

University of Wisconsin Experiments

Description of Fitting	Nominal Diameters of Equivalent Pipes					
	⅜	½	¾	1	1¼	2
Cocks and Faucets						
Slow self-closing Basin Cock	93	296	1150	3700		
Old Style Goose-neck Cock	53	156	650	2080		
Spring Self-Closing Cock	49	144	600	1920		
Basin Cock	37	109	455	1460	5600	
¾ in. Compression Sink Faucet	28	84	350	1120	4300	
½ in. Compression Sink Faucet	9.3	28	115	370	1410	
Hose Cock Bib, and Comb. Comp. Sink	12	36	150	480	1850	
Faucets, Both Open						
Comb. Comp. Bath Tub Faucet	8.5	25	105	350	1290	
Laundry Comp. Faucet	7.3	22	90	290	1110	
½ in. Laundry Bib, Old Style	3.6	11	45	145	555	
Garden Hose and Fixtures, including ¾ in. Stop and Waste, ¾ in. Hose Cock, and 50 ft. ¾ in. Rubber Lined Garden Hose	97	288	1200	3850		
Hot Water Storage Tanks, 30 Gal. Capacity Vertical ¾ in. Tubes, 3 ft. 9½ in. long	1.4	4	17	56	210	
Horizontal ¾ in. Tubes 11 in. long	0.4	1.2	5	16	62	
Miscellaneous Valves						
Vertical Valves				10-26		10-32
Lift Check				16-120		30-37
Swing Check				3-20		2-7
Right Angle				3-9		

Automatic Heat *and* Air Conditioning Section

JULY, 1934



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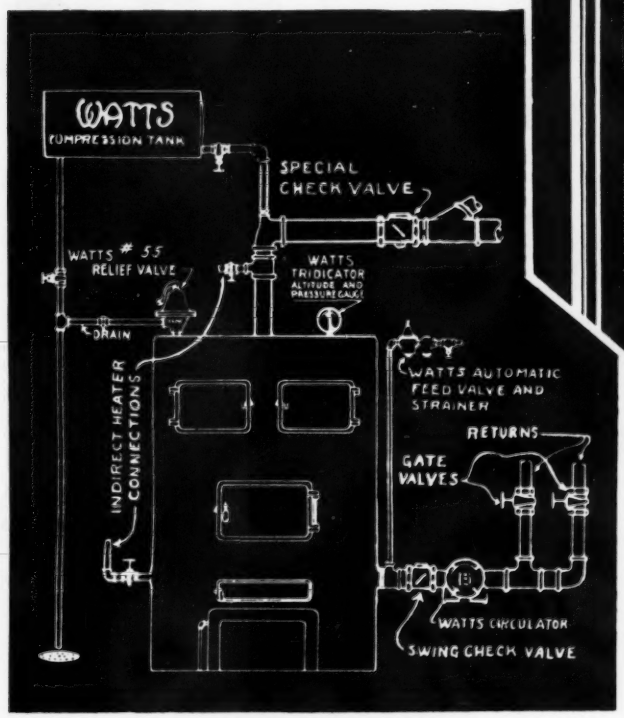

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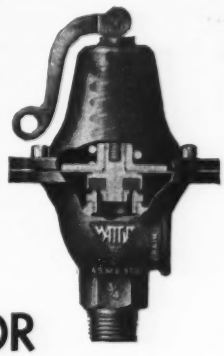

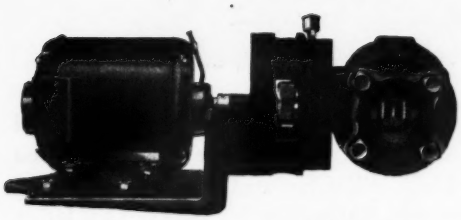

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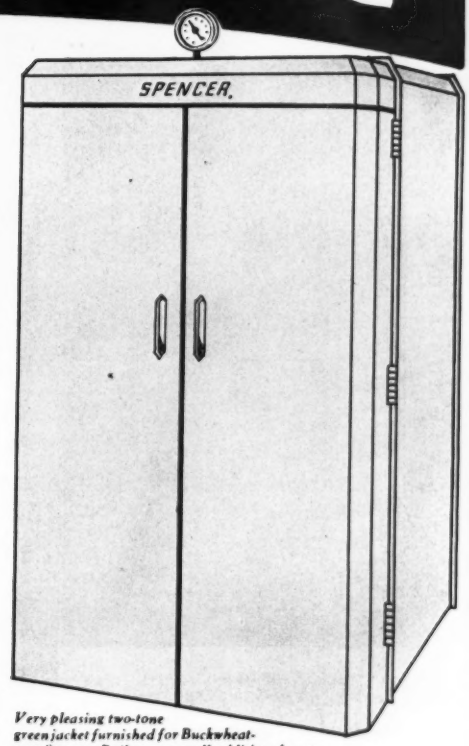

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No. 1 Buckwheat—Lowest Cost Fuel

Give your customers their choice:—the New Low Priced Spencer for Larger-size Fuel; or the popular original gravity stoker Spencer for Smaller-size Fuel.

The Buckwheat burning Spencer has been famous for more than a third of a century; installed in tens of thousands of homes; providing owners with modern Automatic Heat at the very lowest cost. Designed to burn the low cost Buckwheat Anthracite. This Spencer saves owners $4 on every ton compared with the larger sizes, and even more money over other forms of automatic heat. Fuel savings with this Spencer pay back the entire boiler cost in a few years. Now you can offer your customers a Spencer at the PRICE they want to pay, and using the FUEL they want to burn. Write for complete details of Spencer's New Program.

SPENCER HEATER COMPANY, Williamsport, Pa.
Division of Cord Corporation

Why Home-owners Prefer Spencer Boilers

1 No Hand-firing; fuel placed in the water-jacketed storage magazine once a day, rolls down of its own weight to the sloping grate, as fast or slow as heating demands require.

2 Scientific Firing; fuel is automatically fed to the fire a little at a time. More efficient than the most expert fireman.

3 Uniform, steady heat — possible only with Spencer's constantly uniform combustion conditions; no over-heating or under-heating.

4 No blower or mechanical apparatus to get out of order, when heat is needed most. The natural force of Gravity never fails.

5 Adaptable for other fuels. For burning oil, a Spencer will give high efficiency. Every Spencer is designed so gas-burning equipment can be added, and used to alternate with coal heat, if desired.

6 Spencer Boilers are easiest and quickest to install, due to cast iron sectional construction.

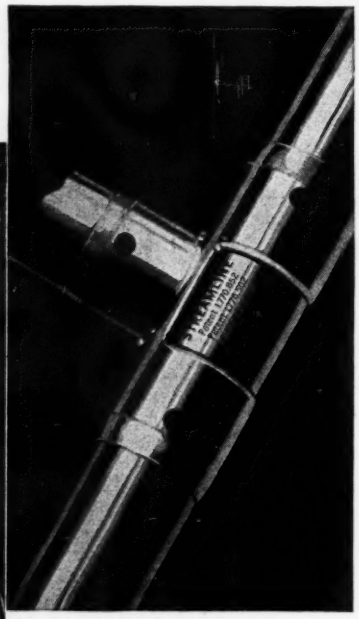
7 Thermostatic Control can be added to Spencer Magazine Feed Boilers for a nominal extra charge.

BOTH OFFER LOWEST COST AUTOMATIC HEAT

"LOOK AT ALL THREE!"

● **TYPE K** . . . Revere Copper Water Tube . . . in action! A section of extensive irrigation system for the flower gardens and trees in Rest Haven Memorial Park, Cincinnati. One of the new uses for this strong yet flexible Tube.

● **TYPE L** . . . Revere Copper Water Tube . . . Soft Temper. One of about forty ice chests installed in R.K.O. Theatres, New York City, to provide patrons with drinking water. 60-ft. coils and Streamline soldered Fittings made this job easy to handle. J. Loeber, New York, Plumbing Contractor, made and installed coils.



● **TYPE M** . . . Revere Copper Water Tube, with close-up of Streamline Fittings . . . the ideal combination for many types of installation. All of the metal in tube and fitting is useful . . . none is needed for threading.

AND *use* "The Big Three" to get more jobs! There's a type of Revere Copper Water Tube for every purpose. Each type meets Government and A.S.T.M. specifications for this product. See list at right and check these features:

Revere Copper Water Tube is a cold drawn, seamless tube, 99.9% pure copper, for water supply and other uses. It is completely deoxidized and possesses a gun-barrel finish inside, free from flaws and blemishes. Used with Streamline soldered Fittings or any standard make of compression fittings, the need of excess metal for threading is eliminated. Available in Hard and Soft Tempers. Hard Temper in straight 12 and 20 ft. lengths; Soft Temper in 30, 45 and 60 ft. coils.

Investigate the opportunities for remodeling and new work opened up by the three types of Revere Copper Water Tube. Address Executive Offices (see below) for the whole story.

REVERE COPPER WATER TUBE

TYPE K: For underground services and all plumbing purposes, particularly where water conditions are severe. Also for gas, steam, oil lines and industrial uses. All sizes, ⅛" to 6"; wall thickness ranges from .032 to .192. Recommended operating pressure: Hard Temper, up to 400 lbs.; Soft Temper, up to 250 lbs.

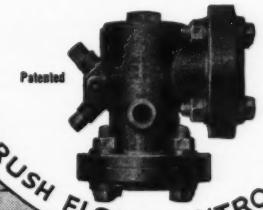
TYPE L: For general plumbing purposes. Suitable for normal water conditions. All sizes, ¼" to 6"; wall thickness ranges from .025 to .140. Comes in Hard and Soft Tempers. Recommended operating pressure: Hard Temper, up to 250 lbs.; Soft Temper, up to 150 lbs.

TYPE M: Hard Temper . . . for general plumbing purposes with Streamline soldered Fittings. Suitable for normal water conditions. All sizes, ⅛" to 6" (⅜" size excluded). Wall thickness ranges from .025 to .122. Recommended operating pressure: up to 250 lbs.

Revere Copper *and* Brass

INCORPORATED

EXECUTIVE OFFICES: 230 PARK AVENUE, NEW YORK CITY · MILLS: BALTIMORE, MD. · TAUNTON, MASS. NEW BEDFORD, MASS. · ROME, N. Y. · DETROIT, MICH. · CHICAGO, ILL. · SALES OFFICES IN PRINCIPAL CITIES



THRUSH FLOW CONTROL VALVE

THRUSH FLOW CONTROL SYSTEM

Makes hot water heating instant heating.
Reduces running time of burner.

●

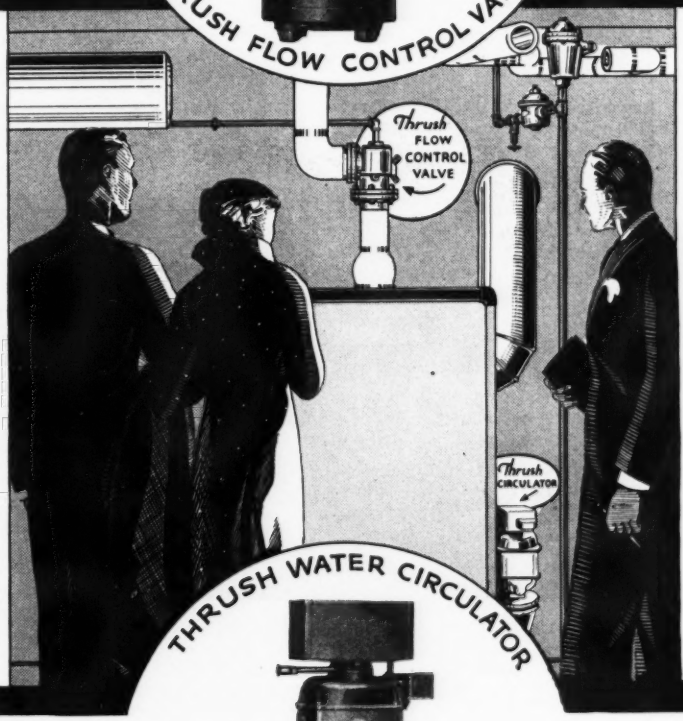
Prevents overheating.
Provides Domestic Hot Water Supply that is really hot.

●

Permits year 'round use of burner.
Keeps temperatures uniform.

●

Cures water circulation troubles of old installations.
Can be put on any new or most old plants easily, quickly, economically.



READ WHAT THEY SAY:

"The Hot Water Heating plant equipped with Thrush Flow Control System in my home is automatic in every way. On July 3 the thermometer outside dropped to 53 degrees. When I got up in the morning I found my home heated to 70 degrees without even lighting a match."—writes J. Fletcher Carter, Pitman, N. J.

●

"Mrs. James Conlon's new Thrush Flow Control System will make a saving of approximately 60% in fuel, as the burner is now on only thirty minutes whereas it used to be on for as much as three hours"—writes Clark Oil Burner Sales, Kalispell, Montana.

●

"The Thrush Flow Control System on our heating plant provided us with Domestic Hot Water during the summer months and kept our house at a uniform temperature of 75 degrees twenty-four hours a day, during the zero and sub-zero weather last winter. Our fuel bills for the year amounted to only $99.00"—writes J. S. Carter, Philadelphia, Pa.

THRUSH WATER CIRCULATOR

THRUSH FLOW CONTROL FOR HOT WATER HEAT

Install Thrush Flow Control System with your oil burner on every Hot Water Heating job, and you will insure the efficient operation of your burner, the satisfaction of your customer, and add a nice profit for yourself.

Thrush Control is essential to provide the home comfort expected in the home of today. It makes Hot Water Heating quick heating, *instantaneous* heating! By the Thrush Method, a reservoir of hot water is kept available for instant distribution throughout the heating system when heat is needed. Thrush Forced Circulating Hot Water reaches every radiator in every room quickly.

IS ESSENTIAL EQUIPMENT FOR THE HOME OF TODAY

When heat is not needed, there is no circulation through the radiators, therefore no overheating and no continuous heat loss. It also makes it possible to provide a dependable supply of Domestic Hot Water (which is really hot) at negligible cost. Because the water in the boiler is kept at a uniformly high temperature, an auxiliary water heater works efficiently.

It pays to sell equipment which pleases users so much they go out and make other sales for you! Read the letters above—then mail the coupon for our new booklet.

MAIL THIS COUPON

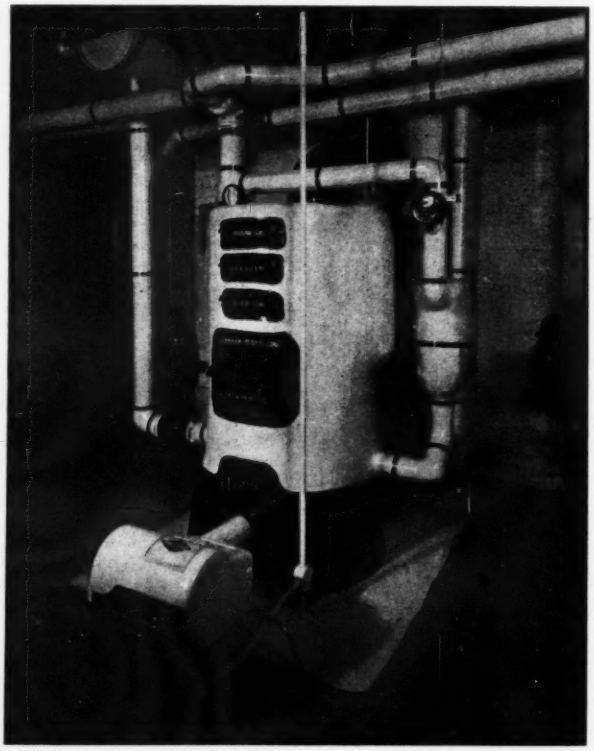
H. A. Thrush & Co.,
Box, 559 Peru, Ind.

Please send booklet describing Thrush Flow Control Heating System and its advantages for use with automatic firing devices.

Name .....
Address .....
City ..... State .....

H.A.THRUSH & COMPANY
PERU, IND.

Owner
H. G. Dougherty,
Lancaster, Pa.



Contractor
J. F. Skramusky,
Lancaster, Pa.

Boiler is a Burnham. The equipment is: Thrush Electric Circulator. Thrush Flow Control Valves supplying heat to radiators. Room Thermostat controlling circulator. Aquastat controlling oil burner. Domestic water supply is maintained all year by Indirect Heater and Vertical Storage Tank.

HERE'S REAL BURNHAM

Cozy Comfort Heat

ISN'T it so, that every once in a while you have a chance to make an installation, that when the other fellow gives it just one glance, he knows it's a winner?

Just such a job is this one which Skramusky of Lancaster, Pa., did for H. G. Dougherty, who is one of his home town folks.

Of course, every one *claims* their boiler is a humdinger on economy when oil heated. But we are not *making any claims.* Seems like claims are out of the running when you have *proofs.* So we sort of stick to proofs. Especially as we have plenty of them to stick to.

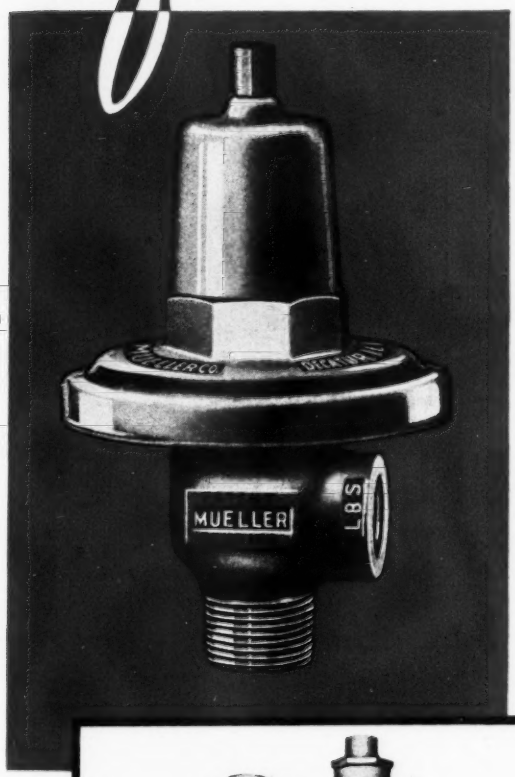
It won't be long now, before we will be having some eye opening things to tell you about the new Burnham built-in Oil Burning Boiler. Might be a good hunch to send your name in for the catalog, then you'll get one the first day it comes from the printer.

Burnham Boiler Corporation

IRVINGTON, NEW YORK

Representatives in all Principal Cities of the United States and Canada

found . . .



A New Standard for Relief Valves

AS one contractor puts it: "When you need a relief valve 'bad' you need it good!"

And no truer fact was ever uttered.

Realizing the vital importance of a device on which so much depends, the Mueller engineering staff has for many years carried out a program of research and development work which has been well rewarded in results accomplished.

The new Mueller Relief Valves offer a new degree of perfection in relief valve construction and performance. These valves will open, relieve a good flow and close tight with less than 5% variation of the set relief pressure. Exhaustive field tests have demonstrated their efficiency and dependability under every conceivable condition of service.

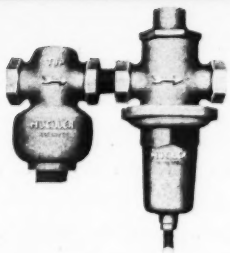
Ask for Demonstration

Before you buy a relief valve see the new Mueller. Remember that this is one type of equipment on which you cannot afford to take chances. One of our representatives will be glad to explain the plus features of the new Mueller.

MUELLER CO., Decatur, Illinois

Branches in Principal Cities

Factories: Decatur, Ill.; Chattanooga, Tenn.; Los Angeles, Calif.; Sarnia, Ontario



Protect the plumbing

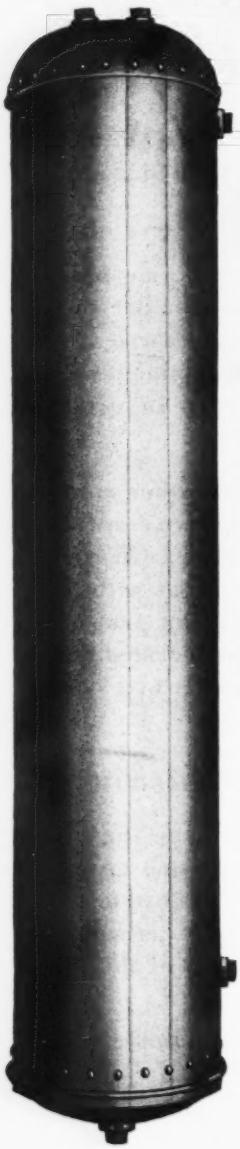
and water supply fixtures from excessive pressures and shocks

There is a Mueller Pressure Reducing and Regulating Valve for every requirement. The H-9000 Regulator, illustrated above, is typical of Mueller equipment of this type. It has full seat opening and is therefore capable of supplying full volume at the reduced pressure. Diaphragm is of special composition, reinforced to withstand pressures of 800 pounds to the square inch. The valve is made of Mueller Brass and Bronze throughout. All wearing parts are readily accessible. Ask for circular covering the H-9000.

MUELLER

HEATING AND PLUMBING SUPPLIES AND SPECIALTIES

Built LIKE A BATTLESHIP



The improved All Copper G&C Boiler Riveted Top and Bottom and Reinforced to insure against collapse.

The GERSTEIN & COOPER
IMPROVED • RUST PROOF • BOILER
Made of Heavy — Pure Unalloyed Copper

The improved Gerstein & Cooper Copper Range Boiler embodies every essential feature to insure long years of service without complaint.

It is made of heavy copper, Reenforced in accordance with the highest standards of modern boiler construction and our own practical experience during the last thirty years.

On your next replacement jobs, sell the idea of dressing up the kitchen with this highly polished rust proof boiler backed by the G&C 20 year guarantee.

"Built Like a Battleship" is no idle statement, for this superior all copper G&C boiler will qualify your sales arguments in every respect and it will prove profitable for you to point out its particular advantages to your trade.

Stocked in 200, 250 and 350 pounds test pressure or made any desired size or pressure requirements, on specification.

Specify the G & C Improved, 20 Year Guaranteed boiler to your jobber. Write for more complete details on this outstanding all-copper boiler direct to

GERSTEIN & COOPER CO.
South Boston, Massachusetts

Offices in New York and Baltimore

Representatives: Troop Water Heater Co., Pittsburgh; Edward Sinn, Harrison, N. J.; Strong, Carlisle & Hammond Co., Cleveland, Ohio

ARCO *Full Flow* FITTINGS are WROUGHT COPPER!

ARCO

14 essential fittings and adaptors are all you need! Take them with you in various sizes . . . and make *any* odd size fitting *on the job.* Ask your jobber or write to us.

WROUGHT Copper Fitting and Copper Pipe heat together and cool together—because both are copper. Take your torch away from an Arco sweated joint and no sudden jar will dislocate it. Once it's been sweated by a man who knows his trade, *this* joint will stay—and neither pressure nor weight nor pull can budge it. Arco Wrought Copper Fittings and Wrought Copper Pipe resist corrosion, won't rust. They make a better job, a stronger job, a quicker job . . . a job that's a source of pride and profit to any good plumber.

Copper Pipe and Fitting Division

AMERICAN RADIATOR COMPANY

40 West 40th Street, New York, N. Y.

Division of AMERICAN RADIATOR & STANDARD SANITARY CORPORATION

ARCO WROUGHT COPPER FITTINGS and ARCO WROUGHT COPPER PIPE •

"WE ORDER EVERYTHING FOR OXWELDING AND CUTTING FROM LINDE"

CONFIDENCE . . in Oxwelded Piping and Linde Process Service

THE contract called for an oxy-acetylene welded piping installation and the contractor bid with confidence—knowing Linde Process Service would help.

Linde service operators helped the foreman to qualify his regular men, completing their grasp of the latest developments in pipe welding. They were instructed in making templets for special fittings, shown how to fabricate the boiler headers and how best to use welding in erecting the mains and risers.

When that job was finished the piping contractor had an organization skilled in welding, ready to tackle more and bigger oxwelded pipe installations. He appreciates that when he buys from Linde, the full benefits of the oxy-acetylene process are assured to him through Linde Process Service.

Linde Process Service can bring to your piping problems also the widespread experience Linde has acquired in over twenty years of pioneering and developing oxy-acetylene applications. It will interpret for you the latest methods developed in the laboratory and show you how to apply them profitably to your own actual welding and cutting operations. This service is supplied to Linde customers without obligation.

Oxwelding can be used to join pipe of any metal, and for any type of piping service. Here a weld is being made in brass pipe.

In an installation of steel pipe, such as this, Lindewelding—the high speed, low cost method of joining pipe—can be used to advantage.

THE LINDE AIR PRODUCTS COMPANY

Unit of Union Carbide and Carbon Corporation

126 Producing Plants UCC 627 Warehouse Stocks

IN CANADA, DOMINION OXYGEN CO., LTD. TORONTO

LINDE OXYGEN • PREST-O-LITE ACETYLENE • OXWELD APPARATUS AND SUPPLIES • UNION CARBIDE

PRODUCT OF A UNIT OF UCC UNION CARBIDE AND CARBON CORPORATION

Users of products and processes developed by Units of Union Carbide and Carbon Corporation benefit from a most unique coordination of scientific research with manufacturing, sales and service facilities. You are cordially invited to visit this summer the numerous exhibits sponsored by the Corporation in both the Basic and Applied Science sections in the Hall of Science at Chicago's 1934 A Century of Progress Exposition.

Sales Offices:

Atlanta	Houston	Portland, Ore.
Baltimore	Indianapolis	St. Louis
Birmingham	Kansas City	Salt Lake City
Boston	Los Angeles	San Francisco
Buffalo	Memphis	Seattle
Butte	Milwaukee	Spokane
Chicago	Minneapolis	Tulsa
Cleveland	New Orleans	
Dallas	New York	
Denver	Philadelphia	
Detroit	Phoenix	
El Paso	Pittsburgh	

NRA

IT'S LEAKPROOF!

...this heating element

in a Sturtevant SPEED HEATER

Here's a heating element that you can forget as far as leaks are concerned. It's absolutely leakproof. Note how the tube of each section of extended surface is connected to the header. Each joint is made permanently tight by a special method developed by Sturtevant.

GUARANTEED FOR 200 LBS. PRESSURE

Heating elements guaranteed for all steam pressures up to 200 lbs. per sq. in. are standard equipment in Speed Heaters.

TIME-SAVING INSTALLATION

You can connect up to either side of a Speed Heater. No need to bring supply line around the heater. Saves time, labor, pipe.

WE SUPPLY THE HANGERS

And save you time and expense. They're handy hangers of malleable iron all ready to be formed in your vise to fit installation conditions.

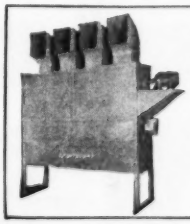
MULTI-SPEED MOTORS

A big advantage. Provide up to 5 speeds, depending on characteristics. High speed for extra-fast heating. Lower speeds are used for set normal temperatures.

QUICK SHIPMENT

Most popular voltages stocked in many locations. Other standard voltages stocked at Hyde Park.

SEND FOR COMPLETE DATA



STURTEVANT REXVANE HEATER

For floor, wall or ceiling installation. Built in a wide variety of types and sizes, ranging from 100,000 to 1,000,000 B.T.U.

B. F. Sturtevant Company, Hyde Park, Boston, Mass.

☐ Send me Sturtevant Speed Heater Catalog No. 396.

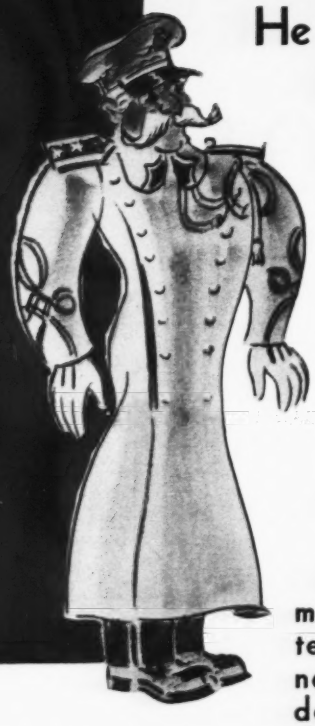
☐ Have your nearby representative call.

Name.....

Company.....

Address.....

D. E. 7-34



He **Looks Like** an Admiral but **May Be** a Doorman

• It's What's Under the Jacket that Counts

Buy a Fine Jacket by all means, but, don't buy a boiler on jacket appearances alone. Investigate the quality of the boiler.

In poetry perhaps "the coat makes the man." But in everyday prose you can't tell whether a man commands dreadnaughts or taxicabs, unless you look deeper down than the braid on his sleeves and the gold frogs on his chest.

Neither can you judge a boiler by its color scheme or the chromium plate on its jacket. The only basis for sound judgment is to *find out what's under the jacket.* Kewanee invites such searching investigation, because in the boiler itself are features which make it outstanding for LONGER LIFE, BETTER PERFORMANCE, LOWER FUEL BILLS.

If you are not acquainted with the important details of Kewanee construction, post yourself on them now! For they will put you in a position to go to your prospects with the only type of sales story that can interest them under today's conditions.

Look for ALL these features

1 **TWO-PASS TUBES**
Heavy walls, copper-alloyed to prevent corrosion.

2 **HEAVIER DOORS AND FRAME CASTINGS**
With gas-tight ground joints.

3 **SPINNER BLADES**
Hold those hot gases longer.

4 **REFRACTORY LININGS**
Insulate the fire and flue doors.

5 **HOT WATER COIL**
For heating domestic hot water.

6 **DRAFT ADJUSTER**
For automatic draft control.

the Best Boiler Built — yet costs the least

KEWANEE BOILER CORPORATION

KEWANEE, ILLINOIS *(Branches in Sixty-One Principal Cities)*

KEWANEE

For Heating Homes and Smaller Buildings With Coal, Oil or Gas

ROUND Type "R" **BOILER**

July 1934

Dealers Oppose Utilities

Prompt success in one market has already met the determined effort of R. M. Sherman, president of the American Oil Burner Association, to correct the uneconomic sales methods of some of the gas companies. The work done by the A. O.B. A. in answering the call for help by the Boston dealers is an indication of the determination with which that organization is responding to President Sherman's decision that oil burner dealers should no longer be the meek victims of unwarranted competitive practices.

At the same time, the gas company executives at Boston are to be commended upon their foresight in recognizing the justice of the oil burner man's position and the potential menace to the gas companies if they persist in defying good business principles.

Automatic heat and air conditioning dealers should study the letter from Mr. Sherman on the following page. It discloses his logical analysis of what dealers and manufacturers of equipment for this industry—whether designed for oil, coal or gas—may expect if these gas company methods are not opposed vigorously. If a gas company to build its load is permitted to ignore good merchandising principles in selling gas appliances then the same reasoning would lead a coal company to sacrifice the stoker dealer to retain the coal market, or an oil producer to smother the oil burner dealer to get the market for fuel oil.

The gas companies have awakened in the past year or two to a realization of the low point they occupy in public opinion. Some of their executives protect their vanity with the belief that this is merely the resentment of the public against large enterprises. They would do their own industry a greater service if they realized that many of their own practices, including this one of extinguishing the small dealer, had piled up this wave of public criticism.

Dealers in gas appliances have suffered from utility methods for years. Now with the powerful support which President Sherman and the American Oil Burner Association are enlisting, all dealers in automatic heat and air conditioning should enlist in this job of forcing utilities at least to observe the same principles which NRA codes require of other dealers.

A.O.B.A. Solves Boston Gas Problem

NEWS of its success in the first direct approach to this problem of gas company competition was released by the American Oil Burner Association in the following:

"In the first of a series of conferences with gas companies in key oil burner territories, representatives of the oil burner industry, under the direction of the American Oil Burner Association and the Boston Oil Burner Associates, were successful in obtaining an agreement from the Consolidated Gas Co. of Boston which eliminates an unfair competitive situation in the greater Boston territory, according to announcement made by R. M. Sherman, president of the American Oil Burner Association.

"At a conference on June 7, it was mutually agreed between both the gas and oil burner interests represented that the following terms and conditions of sale would apply on all proposals submitted by the gas company on and after June 15 with respect to the sale of domestic heating equipment:

"a. The down payment on all contracts shall not be less than 10 percent of the contract price.

"b. Monthly payments on the unpaid balance of contract shall not extend beyond 24 months.

"c. The financing charge of not less than ½ of 1 percent per month will be made on the unpaid balance of all time-payment contracts.

"d. Proposals submitted prior to June 15, 1934, shall be subject to the terms and conditions of sale in effect at the time the proposal was drawn, provided acceptance of same is made on or before Aug. 15, 1934.

"e. Requests for estimates received on or before June 15, shall be subject to the terms and conditions of sale in effect at the time the request was made, provided the proposal is submitted to the customer on or before June 30, 1934, and acceptance is made prior to Sept. 1, 1934.

"Previously, the Boston Consolidated Gas Co. in marketing gas-heating equipment had offered equipment without down payment and on 10-year terms. It was against this competitive situation that the Boston Oil Burner Associates complained and requested the assistance of the A. O. B. A.

"Those in attendance at the meeting when the agreement was reached were the following: D. J. Edwards, President, Boston Oil Burner Dealers Association; John J. Scott, Vice-President, Boston Oil Burner Dealers Association; A. W. Clark, Managing Secretary, Dealer Division, American Oil Burner Association; Cyrus Barnes, Sales Manager, Charles H. Tenney & Co.; R. J. Rutherford, Assistant to Vice-President in Charge of Sales, New England Gas & Electric Association; A. A. Sweeney, Merchandise Manager, New England Power Association; F. D. Cadwallader, Vice-President in Charge of Sales, Boston Consolidated Gas Co.; J. J. Quinn, Assistant to Vice-President in Charge of Sales, Boston Consolidated Gas Co.; D. S. Reynolds, Chief Engineer, Boston Consolidated Gas Co."

President Sherman Reports on Utility Campaign

(From R. M. Sherman, President, American Oil Burner Association and President, Silent Glow Oil Burner Corporation.)

R. V. Sawhill, Editor,
AUTOMATIC HEAT AND AIR CONDITIONING,
1900 Prairie Ave.,
Chicago, Ill.

Dear Mr. Sawhill:

I want to thank you for the spendid support you have given the American Oil Burner Association in your June issue of AUTOMATIC HEAT AND AIR CONDITIONING.

Public utility merchandising has always been a serious thorn in the side of household appliance industries. The oil burner industry has been faced with the most ruinous form of this activity that anyone has encountered, but I believe with the wholehearted support of all concerned with the oil burner business, including its trade publications, public sentiment can be molded to form an effective barrier against such practices in the future.

Those of us who are concerned in the future of oil burning are indebted to you for the courageous stand you have taken in this affair, and I feel a similar attitude should be prevalent in the gas appliance and coal stoker fields.

If it is possible to sell gas heating equipment at ruinous prices to build up the gas load, it follows that we may expect similar action from the coal operators with the distribution of coal stokers. It is also reasonable to assume in view of the present trend to combination burners and boilers that if this practice is permitted to follow along its natural course, serious inroads would be made on the plumbing and heating contractors' legitimate business of selling boilers.

I am attaching copy of letter from Boston Oil Burner Associates outlining the gas companies' plan and another one expressing their feelings over the successful outcome of our negotiations.

(Signed) R. M. Sherman.

The letters referred to by Mr. Sherman follow:

A Call for Help

Boston Oil Burner Association
839 Beacon St., Boston, Massachusetts.
April 10, 1934.

American Oil Burner Association,
342 Madison Avenue,
New York, N. Y.

Gentlemen:

For the past two months we have been calling attention of the American Oil Burner Association to the activity shortly to be commenced by the gas companies of

Metropolitan Boston.

We have asked for help. Beyond receiving a booklet entitled *"This Gas Competition"* we have heard nothing from you. I am enclosing an ad clipped from the *Herald-Traveler* of April 9th, announcing the start of this campaign.

To review briefly terms which the gas company are offering: The gas rate has been reduced to 50 cents a thousand cubic feet for all gas over 10,000 feet. They are offering to install a conversion burner for as low as $175.00 cash, or on time payments at the rate of $2.50 a month for ten months in the year for a period of ten years, with no further charges either for interest; service or replacement of parts. In addition to an extensive newspaper campaign in all of the leading Boston papers, the gas companies are circularizing every user of gas in Metropolitan Boston with expensive and attractive direct mail pieces.

While we do not wish to be alarmists in any way, as soon as this advertising takes hold in the mind of the public, it will stop oil burner business dead in its tracks. We asked for help in February in this matter, feeling that if something could be done then before the advertising and circularization started, it would be better than trying to lock the stable after the horse was stolen. The Boston Oil Burner Associates, at their March meeting, voted an assessment of $15.00 per member to hire a lawyer to carry this fight to the Public Utilities Commisson, but when you try to fight the Mellon millions with $250.00, it is just absurd. Furthermore, you will notice from the ad that this is not restricted to the Boston Consolidated Gas Co., but includes all of the gas companies in Metropolitan Boston, which are:

The Arlington Gas Light Co.
Cambridge Gas Light Co.
Malden & Melrose Gas Light Co.
Mass. Utilities Associates
Norwood Gas Company
Suburban Gas & Electric Co.
Worcester Gas Light Co.
Boston Consolidated Gas Co.
Dedham & Hyde Park Gas Co.
The Mass. Lighting Companies
New England Power Association
Old Colony Gas Company
Charles H. Tenney & Co.

We await, with interest, your advice in this matter.

Very truly yours,
Boston Oil Burner Associates,
(Signed) D. J. Edwards, President.

A. O. B. A. Helps Boston Dealers

Boston Oil Burner Association
839 Beacon St., Boston, Massachusetts.
June 7, 1934.

Mr. Ross Sherman, President
Silent Glow Burner Corporation,
1000 Park Street,
Hartford, Connecticut

Dear Mr. Sherman:

The Boston Oil Burner Associates have finally reached a satisfactory agreement with the Associated Gas Companies of Eastern Massachusetts regarding the sale of gas heating equipment.

At a conference this morning, the Boston Consolidated Gas, Charles H. Tenney & Co., Associated Gas & Electric, and the New England Power Co., were represented as members of the Gas Company Associates. They have agreed to modify their terms on the sale of equipment to correspond with those offered by department stores and mail order houses, namely 10 percent down payment, interest charges of one-half of one percent per month, and length of time payment contract not to exceed twenty four months, plus the usual "Summer Plan."

Boston Oil Burner Associates on their side agreed to allow the Gas Companies sixty (60) days in which to close up the proposals now in the hands of prospects. New terms go into effect June 15th.

The Boston Oil Burner Associates want you to know how much the assistance of the A. O. B. A. is appreciated. Arthur Clark has done valiant service for us. During the time he has been up in Boston, he has done an infinite amount of leg work and the credit should be given him for having reached a satisfactory solution of the most serious situation our industry has been confronted with. It was most necessary that this battle be headed up here in Boston by the American Oil Burner Association in order to get all elements interested working under one head. If the American Oil Burner Association does nothing else for us, it has justified its existence in this one case alone.

With kindest personal regards.

Very truly yours,
Boston Oil Burner Associates,
(Signed) D. J. Edwards, President.

Call Oil Burner Conference at Chicago

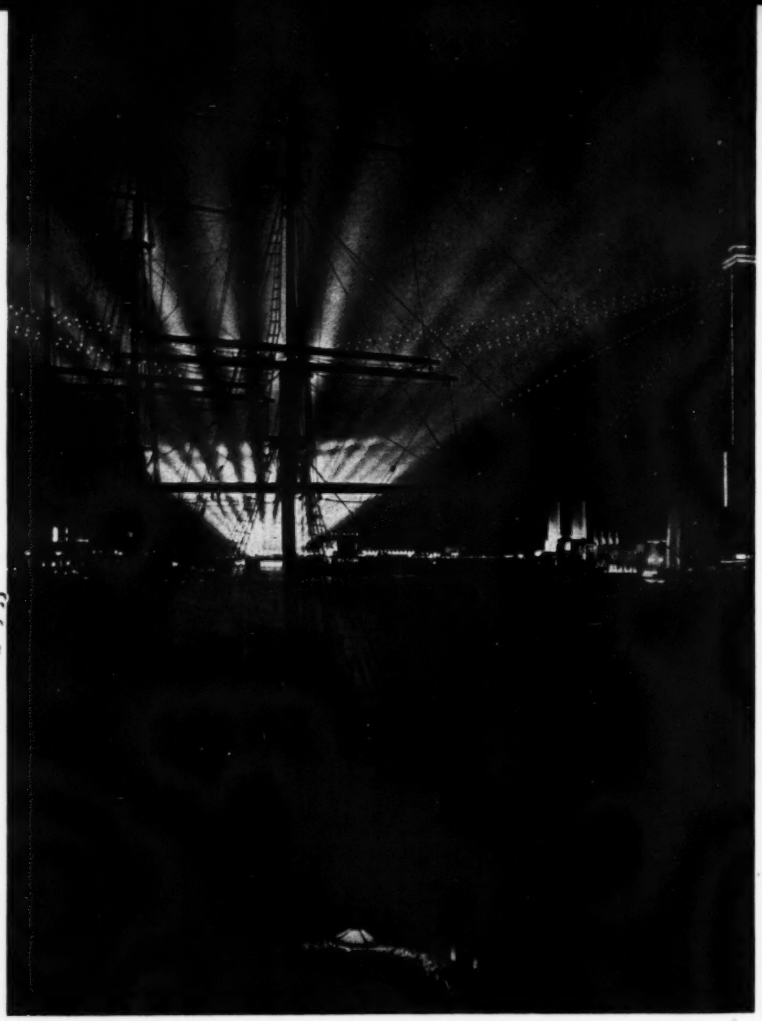
A conference of oil burner manufacturers will be held in Chicago on July 9. Authorization to call this meeting was given by the executive committee of the American Oil Burner Association at the request of R. M. Sherman, association president. The executive committee met in New York on June 11.

The manufacturers will meet on the day preceding the meeting of the board of directors of the association. At this manufacturers' conference, to which both members and non-members of the association are invited, a report will be made to the industry on the current status of the code program. Full opportunity will be given to discuss any problems affecting the industry. These meetings will be held in the Medina Michigan Avenue Club at 2 o'clock.

In discussing the present fuel oil situation, the executive committee at its New York meeting endorsed a protest of the A. O. B. A. to the marketing committee of the planning and co-ordinating committee for the petroleum industry with reference to top price contract provisions and recommended that additional protests be filed on the basis of unwarranted increase in the base price of fuel oil. It was also recommended that protest be made against the present tariff on imported oil.

The current policies and program of the A. O. B. A. were discussed but no action was taken pending further discussion at an adjourned meeting set for June 27.

Heating Littlest America, Admiral Byrd's observation outpost at the South Pole, resolved itself into an insulation and construction problem. Byrd's first ship and a replica of his hut now is at the World's Fair



Visitors at the Chicago World's Fair get this view of Byrd's first South Pole ship. The skyride tower with its lighted cables is shown at the right of the picture

Heating at Little America

THE secret of keeping warm on the edge of the South Pole is revealed to World's Fair visitors in a full-size reproduction of Admiral Richard E. Byrd's hut. It occupies a plot facing the Byrd ship, "The City of New York" which attracted hundreds of thousands of sightseers last year.

This white man's igloo is made of wood with walls of white pine measuring a bare 4-in. in thickness. Add to this the fact that the Admiral's fuel consumption is one gallon of oil a day, for heating, lighting and cooking, and the further item of vents and a door, which is frequently used, all of which admit icy drafts of air ranging in temperature from 65 to 100 deg. Fahr. below zero—and you have a heating problem of unusual character.

The answer can be found in the construction of the hut. Two paper-thin layers of aluminum foil which

function like mirrors, reflect the radiant heat back into the room. The most of the heat generated by the fuel employed by the Admiral as well as by his own body is retained.

The walls, floor and ceiling of the room were fabricated with unusual care, after long consultation with architects and scientists. They were made in panels to facilitate dismantling and assembling. The inside of each panel was covered with fireproof canvas laid on ⅛-in. white pine veneer covered on both sides with kraft paper. Then came a sheet of heavy paper faced on both sides with aluminum foil. This was put on loosely and allowed to bulge so as to create air spaces.

The next layer was a sheet of waterproof paper and then two ½-in. blankets of kapok between which was inserted another sheet of waterproof paper. A sheet of foil glued to one side of heavy paper and facing inwards was the next step and finally there was affixed another panel of paper-covered white pine.

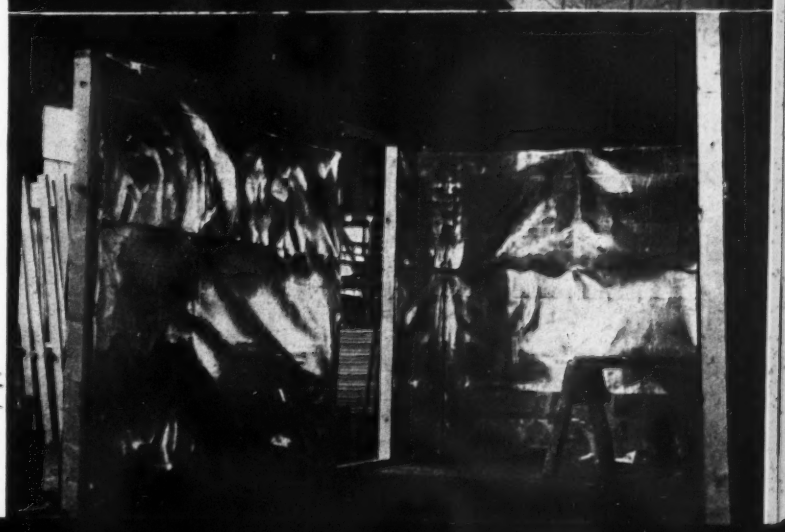
The thickness between inner and outer walls of only 4 in. could be pressed down to a thickness of 1¼ in.

The result of this method of insulation, as reported by Admiral Byrd, has been highly satisfactory. He is living with a fuel consumption of a gallon of oil a day, only three quarts of which were directly used for heating.

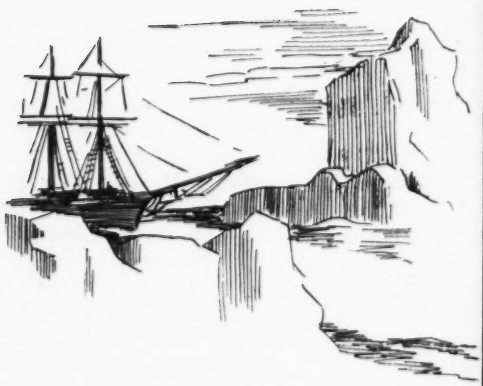
Rear Admiral Byrd's hut is 9 ft. wide, 13 ft., 1 in. long, and 7 ft., 1 in. high, measured on the inside of the room which is the Antarctic home. In addition there is a porch 4 ft. wide and the length of the hut, the roof of which is supported on three sides by boxes of supplies piled up to the level of the flat roof deck. It is in this porch roof that the trap door is placed through which Admiral Byrd can make his way to the surface of the snow should any of his tunnels become choked with ice and snow. There is a door leading from the house to the porch and two wire glass windows in the roof of the house itself. One stove pipe for the stoves and a heater, a 6-in. hole in the floor, connected to a vent pipe which extends above the snow level, and two 4-in. vents in the ceiling constitute the only other openings in this dwelling.

The floor, walls, roof and porch are all made of panels. Except for size and minor details of assembly, all the wall panels are alike, and floor and roof panels are alike. The wall panels are made up of eight layers of materials as already described.

All of the heat generated in this house comes from a cook stove used about twelve hours a day, and an oil heater burning during the other twelve hours. In computing the supplies Admiral Byrd would need, he was allowed three quarts of oil for cooking (assuming the stove would be used a total of twelve hours in twenty-four) and one quart of oil every fourteen hours during which a heater might be used. This small quantity of oil must warm up extremely cold air which enters through the floor vent and occasionally through the door as the Admiral goes in and out, and it must replace the heat loss through the building itself. Buried deep in the snow, the house is sheltered from the winds. But it is a mistake to think that snow does not get colder than the freezing point of water. Scientists in the expedition have found that the air temperatures are carried down into the snow, somewhat slowly to be sure, but eventually penetrating many feet into the solid mass. Even the snow surrounding the house will probably register 60 deg. Fahr. below zero at the floor level before Admiral Byrd is released from his long, lonely hibernation.



Below is a construction view of the specially insulated hut. Above is a view of crowds visiting replica at the Century of Progress Exposition, Chicago



Tests Show Oil Burner Performance

By E. M. Fernald

These tests of a specific job point out general rules for dealers to follow in this type of work

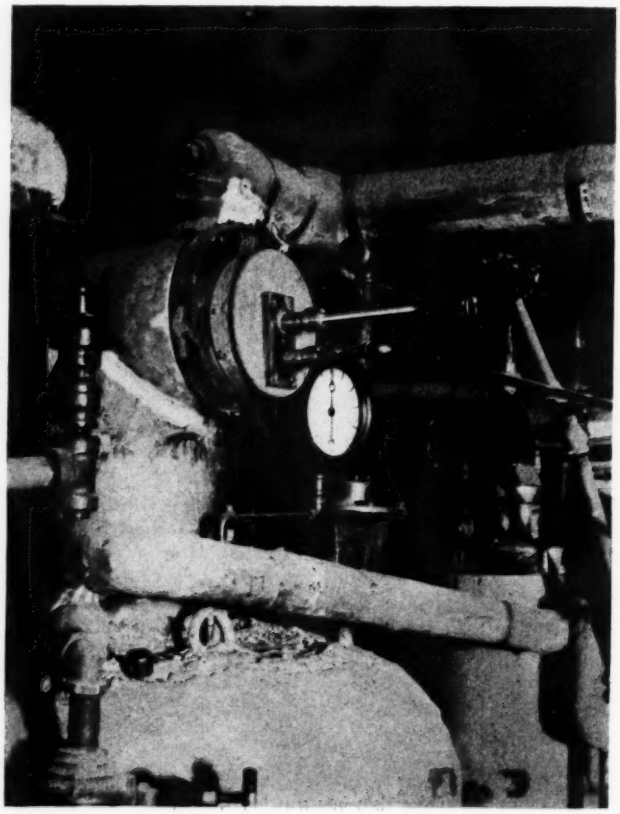


Fig. 1—Closeup view of a portion of the test set-up. Note the thermometer well in the flue

THE test described here shows the effect of a considerable variation in air supply and draft on the performance of a pressure-atomizing burner using 1.56 gallon of oil per hour. The test was run by the writer and the burner was installed in the residence of the writer's mother in Washington, D. C. in the fall previous to the running of the tests. The main object of running the test was curiosity concerning the characteristics of small burners as commonly installed. The data and information presented here is not for the purpose of indicating the characteristics of any one type or make of burner. Rather, the procedure described and the points noted may serve dealers as a guide in testing the oil burner installations with which they come in contact.

The burner has a ⅛ horsepower, 1,725 r.p.m. motor direct-connected to a centrifugal fan and a fuel-oil pump. The discharge pipe of the fan leads straight into the ashpit of the coal designed boiler to which it is applied. The oil delivery tube runs along the axis of the air pipe, and terminates in a spray nozzle. The air pipe contains three vanes which give the air a whirling motion. A pressure gage is connected on the discharge side of the pump. An oil filter is placed on the suction side. The fan has adjustable gates at the inlet. The ignition system is of the non-continuous electric type, which shuts off automatically about a minute after being thrown into operation. The burner is shown in Figs. 1 and 2.

The burner was applied to a cast-iron steam boiler designed for coal and made about thirty years ago. This

is a round boiler 25 in. in diameter, having four sections—base, firepot, intermediate section, and dome. It has 12.1 sq. ft. of primary heating surface and 20.1 sq. ft. of secondary surface. A fireproof glass observation window was provided in the furnace door. When tested, the boiler had been operated three months since being cleaned.

The test apparatus is shown here in Figs. 1 and 2. The smoke hood carried a tee, into which an armored 1000-deg. Fahr. mercury thermometer and a flue gas sampling tube were inserted through stuffing boxes. The thermometer and sampling tube reached well into the gas stream. Air leaks were avoided by strapping the smoke hood to neighboring risers and cementing all joints with stove putty. A continuous stream of gas was drawn through the sampling tube by means of a water aspirator. A common three-pipette Orsat was used for the flue gas analysis. A very sensitive, inclined draft gage containing alcohol indicated the draft in the combustion chamber. This gage was calibrated in place by means of a hook-gage water manometer accurate to 0.002 in. vertical of water. The 1000-deg. Fahr. thermometer was compared later wth a reliable thermocouple. A piece of galvanized sheet steel was mounted behind the adjustable gates at the fan inlet. On it were scribed lines to indicate the position of the gates. A recorded gate position of 1.25 means that the tip of each gate was 1.25 in. from the closed position. A mercury thermometer indicated the boiler room temperature. The fuel used per hour was determined by timing a known volume supplied to the burner from a standpipe consisting of a section of 2-in. pipe between sections of ½-in. pipe and connected in parallel with a gage glass. The reference points at the glass were placed opposite the ½-in. sections of the standpipe, where the drop in level was rapid. A three-way cock in the fuel line allowed the standpipe to be used conveniently. A stopwatch was used for the timing of the fuel and also for the timing of the watt-hr. meter on the lighting circuit when the power used was determined.

As no automatic draft regulator was provided, draft was reduced by putting bricks into the flue. Three principal series of runs were made, each series at a constant degree of flue obstruction. In each series, several runs were made at various openings of the fan inlet gates. On each run the flue temperature was observed every three minutes until it became practically constant. One or two samples of flue gas were analyzed for CO_2 on each run. On several runs on which the fire smoked, the analysis was carried on to include O_2 and CO. Readings were taken also of room temperature, draft, oil pressure, and steam pressure. The appearance of the fire and the degree of sooting of the observation window were recorded. The duration of these runs ranged from 14 to 27 minutes. The data, with instrument corrections applied, are given in Table 2. The properties of the fuel are given in Table 3. The fuel and the watt-hr. meter were timed on special runs.

The effects of manipulating the inlet gates are shown in Fig. 3, which is plotted from Table 2. The three curves of each group correspond to the three series of runs. Since opening the gates admits more air without changing the rate of flow of oil, the percent of CO_2 decreases as the gates are opened. The draft likewise decreases because the chimney cannot maintain as great a suction in the combustion chamber when more air is allowed to come through the fan. Admission of more air by opening the inlet gates causes an increase in flue gas temperature. This effect is contrary to what many would expect. Admission of more air might well be expected to cool the gases. Of course, if a great quantity were admitted, the flue gas would become cooler. The increase of gas temperature shown in Fig. 3 means one or both of two things:

(a) Generation of more heat by the fuel.

(b) Absorption of less heat by the boiler.

As no CO was detected on any run, combustion may be considered as complete on all runs. Hence condition (a) does not obtain, and condition (b) must. But why is less heat absorbed by the boiler? Probably the admission of more air reduces the initial temperature difference between furnace gases and water and impairs especially the radiating power of the gases.

The figures in the first four columns in Table 1 were picked from Fig. 3 at even values of the gate position.

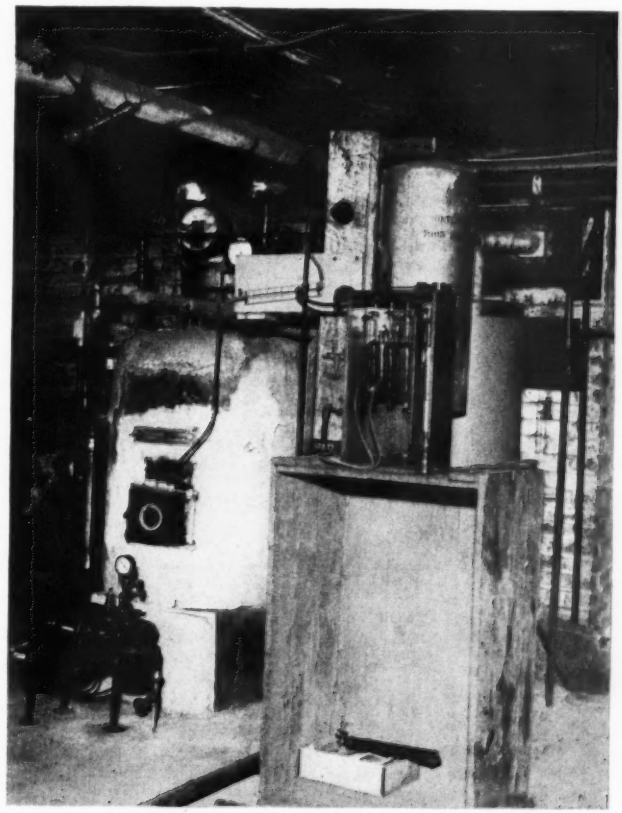


Fig. 2—Here the flue gas sampling connection is shown running from the testing equipment to the boiler flue

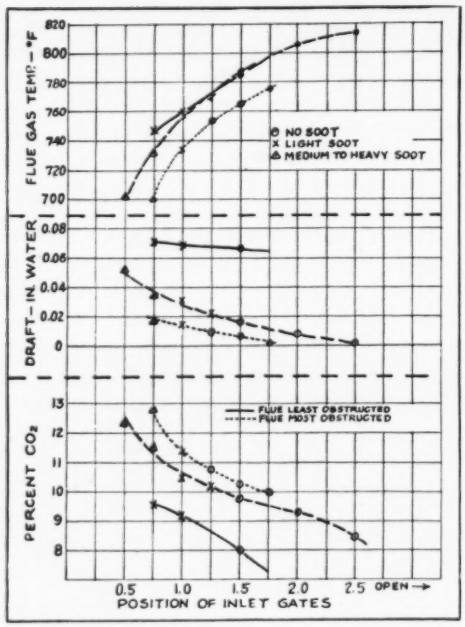


Fig. 3—The effect of the manipulation of inlet gates are shown in these curves

The remaining columns are computed as illustrated in the sample calculation of losses. The essential assumptions are:

(a) Dry gas consists of CO_2, O_2, N_2.
(b) Fuel consists of 86% C, 14% H.

The resulting total stack losses are therefore not of the highest accuracy, but are probably rather near to the true values. The curves of Fig. 4 were plotted from Table 1, no attempt being made to fair the curves. It is shown that low draft gives the least stack loss for any position of the inlet gates.

The curves of Fig. 5 were plotted from Table 2, with stack losses calculated to correspond. These curves show a close connection between CO_2 and stack loss for the whole range of gate positions and drafts. The desirability of operating at high values of CO_2 is plain. For this installation, an increase from 8 per cent to 12 per cent in CO_2 would mean a decrease in stack loss equal to 10 per cent of the heat generated by the fuel and therefore a 10 per cent decrease in fuel used.

The difference between the curves for high and low draft in Fig. 5 is due to infiltration of air around the coal door in response to high draft (all other places for inleakage were cemented shut.) Air coming in at this point should not influence the radiating capacity of the flame, but should rather dilute and cool the combination gases. This is unlike the effect of more air through the fan, obtained by higher draft at constant gate setting, or by increased gate opening. The effect of infiltration at a point remote from the flame may be represented approximately by line a-b in Fig. 5.

The marking of the points in Figs. 3 and 5 so as to indicate the degree of sooting of the observation window should be noted. Only three of the points indicating no soot are at 10 per cent CO_2 or over. Unfortunately, these are at extremely low drafts—0.01 in. or lower—which would be difficult to maintain. Unfortunately also, they show what the burner did under test conditions rather than what it was going to do in normal operation. The test runs followed each other so closely that there were few really cold starts, which are the rule in normal operation. The test runs indicated that the burner would operate acceptably at or very close to 10 per cent CO_2. However, it now appears that associated with the normal cold start is appreciable extra soot, to minimize which the air supply must be increased so as to give less than 10 per cent CO_2. Attempt to operate the burner at 10 per cent CO_2 resulted in the formation of considerable soot, which blew out into the cellar during the short periods of positive pressure at starting. Various expedients will be tried during the coming season to avoid this, including the control of draft by an automatic regulator instead of by bricks in the flue. The

Table 1

Loss in Flue Gas

Position of Inlet Gates	Draft In. Water	Per-cent CO_2 (x)	Flue Gas Temp. °F (t_g)	Lb. Dry Gas Per Lb. C.	B.t.u. Lost In Dry Gas		In Moist Flue Gas		
					Per lb. Gas	Per lb. Carbon	Per lb. Carbon	Per lb. Fuel	Percent of H. V.
0.75	0.019	12.8	700	19.8	151	2990	4960	4270	22.0
	0.038	11.3	734	22.2	159	3530	5520	4756	24.5
	0.072	9.6	748	26.0	163	4250	6250	5370	27.7
1.00	0.014	11.4	735	22.0	160	3520	5510	4750	24.5
	0.028	10.6	756	23.6	165	3890	5895	5070	26.2
	0.069	9.2	760	27.1	166	4500	6510	5600	28.9
1.25	0.010	10.8	753	23.2	164	3800	5800	4990	25.7
	0.022	10.1	773	24.8	169	4200	6215	5350	27.6
	0.067	8.7	773	28.6	169	4840	6860	5900	30.4
1.50	0.006	10.3	766	24.3	167	4060	6070	5220	26.9
	0.016	9.8	788	25.5	172	4390	6420	5520	28.5
	0.066	8.0	786	31.0	172	5340	7365	6350	32.7
1.75	0.003	10.0	776	25.0	169	4225	6245	5360	27.6
	0.012	9.5	798	26.2	175	4580	6615	5690	29.3
	0.065	7.3	798	33.9	175	5940	7975	6860	35.4

Sample Calculation of Losses

(Table 1: Gates 1.25, Draft 0.022)

lb. Dry Gas per lb. Carbon

$$\frac{240}{x} + 1 = \frac{240}{10.1} + 1 = 24.8$$

(Dry gas is assumed to consist of CO_2, O_2, and N_2)

Btu. Lost per lb. Dry Gas

$0.24\ (t_g - 70) = 0.24\ (773 - 70) = 0.24 \times 703 = 169$ Btu.

Btu Lost in Dry Flue Gas per lb. Carbon

$$\frac{\text{Btu. lost}}{\text{lb. dry gas}} \times \frac{\text{lb. dry gas}}{\text{lb. C}} = 169 \times 24.8 = 4200 \text{ Btu.}$$

Btu. Lost in Moist Flue Gas, per lb. Carbon

If C = 86%, H = 14%, there would be 1.465 lb. water per lb. C.

Btu. lost per lb. $H_2O = 1084 - t_{room} \pm 0.47\ t_g$

$= 1084 - 70 + 0.47 \times 773$

$= 1014 + 363 = 1377$ Btu.

Loss in moisture $= 1.465 \times 1377 = 2015$ Btu./lb. C.

Loss in moist flue gas $= 4200 + 2015 = 6215$ Btu.

Btu. Lost in Moist Flue Gas, per lb. Fuel

$$\frac{\text{Btu. loss}}{\text{lb. Carbon}} \times \frac{\text{lb. Carbon}}{\text{lb. Fuel}} = 6215 \times 0.86 = 5350 \text{ Btu.}$$

Btu. Lost in Moist Flue Gas, Percent of Heating Value

$$\text{H.V.} = \frac{\text{Btu.}}{\text{gal.}} \div \frac{\text{lb.}}{\text{gal.}} = \frac{141{,}700}{7.30} = 19{,}400 \text{ Btu./lb.}$$

$5260/19{,}400 = 27.1$ %

initial deposit of soot on the rear wall of the combustion chamber burns off quickly, and the primary heating surface was not excessively dirty at the end of the season.

Data and results of special runs are given in Table 4. In most localities, the cost of electricity will lie between 5 per cent and 10 per cent of the cost of fuel. The curious result of a certain manipulation of the burner may well be mentioned here. As installed, the burner sent the flame to the right of the combustion chamber. The fire was centered by turning the vanes in the air pipe to the left. However, trials with various gate positions and drafts showed that smoke began at lower CO_2 than formerly. The fire was therefore returned to its original eccentric position. This behavior, together with the failure of the fire to remain lighted in the first combustion chamber constructed for it, shows that these burners are quite sensitive to conditions difficult to evaluate and control. The writer suspects that those who install domestic burners do not realize how much they do not know about combustion chambers.

Table 2

CO_2 and Temperature

Series and Run	Position of Inlet Gates	Draft In. Water	Per-cent Co_2	Flue Gas Temp. °F.	Soot on Glass Window	Remarks
1-1	1.25	0.022	10.2	770	light	Series 1 — Most of cross-section of flue obstructed by bricks.
1-2	1.50	0.017	9.8	788	none	
1-3	2.00	0.008	9.3	806	none	
1-4	2.50	0.002	8.5	814	none	
1-5	1.00	0.031	10.5	758	medium	
1-6	0.75	0.035	11.5	732	medium	
1-7	0.50	0.052	12.4	702	heavy	
2-1	1.50	0.008	10.3	766	none	Series 2—Bricks as in Series 1. Draft further reduced by opening into flue.
2-2	1.75	0.002	10.3	766	none	
2-3	1.25	0.010	10.8	754	none	
2-4	1.00	0.015	11.4	734	light	
2-5	0.75	0.018	12.8	700	heavy	
3-1	0.75	0.072	9.6	748	light	Series 3 — Flue clear, maximum draft.
3-2	1.00	0.069	9.2	760	light	
3-3	1.50	0.068	8.0	786	none	

Average boiler room temperature—70 deg. Fahr.
Oil pressure throughout—102 lb. per sq. in.

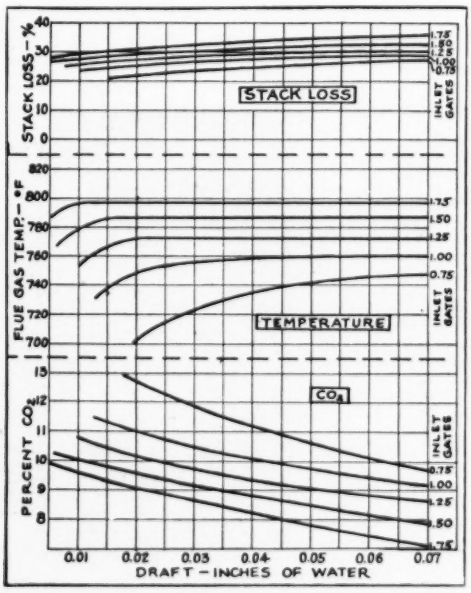


Fig. 4—The curves shown here were plotted from the data contained in Table 1

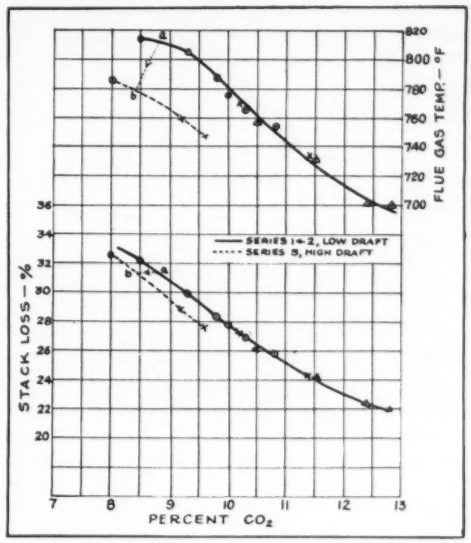


Fig. 5—The difference between the curves for high and low draft in this chart is due to infiltration of air around the coal door

Table 3

Properties of Fuel

A. P. I. Gravity	29.4°
Flash, P. M. Closed Cup	174°
Sulphur	0.786%
Viscosity at 100 deg. Fahr.	
Saybolt Universal	34 seconds
Initial Boiling Plant	385° F. (a)
10% volume over at	428° F. (a)
90% volume over at	554° F. (a)
End point	609° F. (a); 610° F. (b)
B.t.u. per gallon	141,700
Weight per gallon	7.3 lb.; 7.30 lb. (b)

(a) Determined at a local testing laboratory from a sample of the oil used.

(b) Determined by the writer from a sample of the oil used. The other figures were given by Standard Oil Company of New Jersey, Washington Branch, as applying to the furnace oil being furnished by them about the time of the tests. Note the agreement as to end point and weight per gallon.

The most important conclusion from these tests may be summarized as follows:

(1) For any setting of the inlet gates, stack loss is least when draft is low.

Table 4

Relative Quantities of Fuel and Electricity

Time for 0.377 gal. of fuel	14 m 28.6 sec
Time for 12 revs. of watt-hour meter	2 m 47 sec
Watthours per rev. of meter	5/12
Rate of use of fuel	1.56 gal/hr
Rate of use of electricity	108 watts
Watthours per gal. of fuel	69.2

(2) Under normal operating conditions, addition of more air causes a rise in flue gas temperature.

(3) There is a close relation between CO_2 and stack loss, irrespective of other items. Co_2 should be as high as practicable.

(Continued on Page 83)

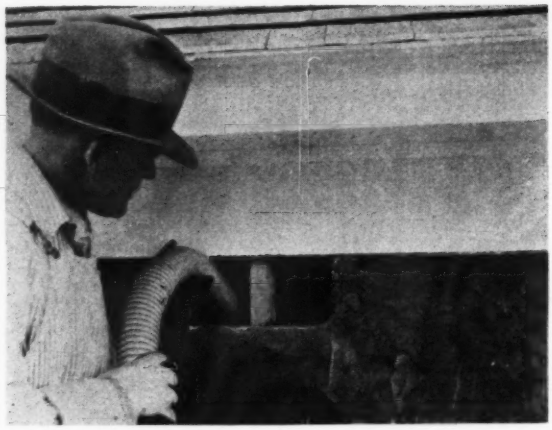


Fig. 1—"The heating engineer should recommend and specify the use of insulation and other heat conserving measures."

The Economics

The house heating and cooling committee of the American Gas Association is sponsoring a series of articles to cover all phases of house heating and cooling with gas. This is one of outstanding interest and is written

By Thomson King

THE importance of our subject is obvious and explicit. Heating is only necessary because of heat loss. Conservation is essentially the reduction of loss and waste to a minimum. The quantity of gas or any other fuel necessary to heat any structure will be determined by two things: the difference between inside and outside temperatures, and the heat loss per degree of difference. The first is determined by the weather and the inside temperature it is necessary to maintain, and the second by the material and construction of the structure and the manner in which it is used. All these factors, with the exception of the weather, are subject to variation and control by us.

It will be the object of this report to consider the more important and practical measures of heat conservation in gas-heated structures, and it is our intention to deal with the economic rather than the strictly technical aspect of the question. There is, we believe, plenty of data available on the insulation value of building materials and similar subjects; it seems that there is, however, a need for study of the economic aspects of the problem. Results should be presented and interpreted so that they may serve as a guide for all who are interested in conserving fuel and reducing costs. They should indicate clearly what measures should be used and how far they should be carried to secure results that will justify their adoption by yielding a satisfactory return on their cost.

The heat loss from any structure may be divided into: losses due to heat conduction and radiation, and losses due to air change. There is an essential difference between these classes. We may reduce the first as far as we like, although there is a practical limit to how far we should go. But since a certain amount of air change is necessary to health and comfort, there is an absolute limit to the reduction of losses due to air change in any occupied building beyond which we must not go, even if we are able. It is evident that for any structure there is a necessary heat loss which we cannot seek to reduce. All other losses may be reduced as far as the savings justify the expense. It is our problem to investigate and discuss the ways and means, and find out how far each may be profitably carried.

Before beginning a detailed consideration of conservation measures, it may be well to point out that we have found it convenient in dealing with our problems to use the therm as a common unit in which to express heat requirements, heat loss, or heat saving and heat value in fuels; also, that expressions such as the following are useful in illustrating the relations between quantities with which we are dealing.

Let D = the normal degree days.
Let C = the cost of the fuel, dollars per therm.
Let E = the average over-all efficiency of the heating plant for the heating season; that is, the Btu.

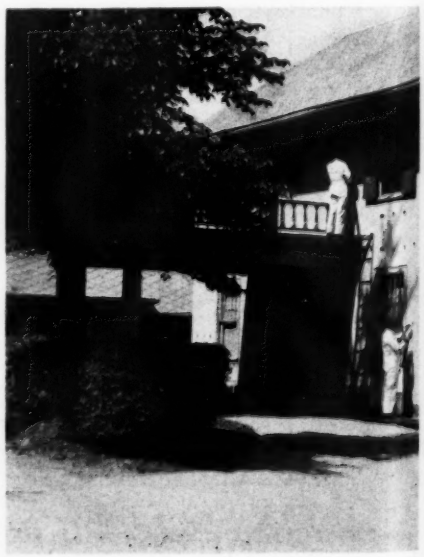


Fig. 2—Here is an example of blowing insulation into the walls of a residence

cs of House Heating with Gas Fired Equipment

delivered to the house divided by Btu, in fuel fired.

Let H = the toal heat loss per day per degree difference in temperature expressed in therms.

Let H_s = the saving in heat per day per degree difference in temperature for any given conservation measure expressed in therms.

Let I = the cost of the insulation or other heat conserving measure in dollars.

Some of the relations between these factors are expressed by the following simple formulas:

Heat requirements per season..... = HD Therms

Heat necessary in fuel for season.... = $\frac{HD}{E}$ Therms

Cost of fuel for season..... = $\frac{HCD}{E}$ Dollars

Heat saving per season due to any measure ..... = H_sD Therms

Saving in fuel per season..... = $\frac{H_sD}{E}$ Therms

Saving in money per season..... = $\frac{H_sDC}{E}$ Dollars

Return on money invested in any measure for heat conservation..... = $\frac{H_sCD}{EI}$

It is evident that the saving possible with any conservation measure varies directly as the cost of the fuel and the degree days, and inversely as the over-all efficiency of the application of the fuel.

Broadly speaking, the more important measures for heat conservation fall under the following heads:

Reduction of Inside Temperatures.

Insulation.

Weatherstripping and Caulking.

Double Windows.

In order to discuss and evaluate the practical results to be obtained, it will be well to have a fairly typical house to use as an illustration.

Let us take a two-story separate dwelling of fairly good frame construction, shingle or clapboard outside, slate roof, with unfurnished, unheated attic. Horizontal cross-section 30 ft. by 24 ft. inside, ceiling height, first floor, 9 ft.; second floor, 8 ft. Total contents, not including basement or attic, 12,960 cu. ft.

Let us assume this house to be uninsulated, with double-hung sash windows, single glass, not weatherstripped. It has a hot water heating system, with plain-type thermostat.

Table A gives the heat losses data, including areas, conductance coefficients used, and infiltration data for average conditions of 7-mile wind and maximum day with 20-mile wind.

The figures for infiltration losses and savings to be obtained by weatherstripping are based upon an assumption that the house will have 382 lin. ft. of crack around doors and windows, and that with the 7-mile-per-hour wind, no weatherstripping, infiltration is 12.5 cu. ft. per foot of crack per hour; with weatherstripping, 8.8. For a 20-mile wind with no weatherstripping, infiltration is taken as 59.3 cu. ft. per foot of crack per hour, while with weatherstripping this figure is reduced to 35.5.

In estimating the saving due to double windows and storm doors, we have assumed a saving in infiltration losses the same as for

weatherstripping, plus a saving based on the conductance for the glass area being reduced from 1.13 to .55 Btu per square foot per degree per hour. The glass area is assumed to be 311 sq. ft.

Table A
Heat Loss Data Typical House Uninsulated
Conduction Losses

	Area Sq. ft.	Heat Conductance	Loss Per Degree Per Hr. B.t.u.	Loss Per Degree Per Day B.t.u.	Loss Per Degree Per Day Per Cent of Total	Max. Hour Loss B.t.u.	Max. Hour Loss Per Cent of Total
Glass	311	1.13	351	8,424	26.1	24,570	22.9
Walls (Net)	1,633	.262	427	10,248	31.8	29,890	27.8
Roof	720	.280	201	4,824	14.9	14.070	13.1
Floor*	720	.34	245	5,880	18.2	4,900	4.5
Totals...			1,224	29,376	91.0	73,430	68.3

*20 degrees constant temperature difference between first floor and basement, is used in floor loss figures.

Infiltration Losses

	Average Conditions—7-Mile Wind: Volume Cu. Ft. per Hour	Loss B.t.u. per Degree per Hour	Loss B.t.u. per Degree per Day	Loss per Degree per Day Per Cent	Maximum Conditions—20-Mile Wind: Volume Cu. Ft. per Hour	Loss B.t.u. per Degree per Hour	Loss B.t.u. per Degree per Day	Loss Max. B.t.u.	Hour per Cent of Total
windows	1,200	24	576	1.8	1,200	24.0	576	1,680	1.6
Walls, Roof, Floor	133	2	48	.1	524	10.5	252	735	.7
Opening doors and windows	1,200	24	576	1.8	1,200	24.0	576	1,680	1.6
Totals.....	6,083	121	2,904	9.0	24,254	485.1	11,642	33,957	31.7
Total Conduction and Infiltration Losses...			32,280			1,709.0	41,018	107,387	

Let us assume that our house will be heated by a gas boiler with gas costing 10 cents per therm, and that the average degre days for the locality are 4,500. Then D = 4,500 and C = .1. We will assume that E= 70 per cent, which is a very conservative figure, even including the spring and fall heating when over-all efficiency is necessarily very low. From Table A, H = .32280.

Then, the total heat requirements per season = .32280 × 4500 = 1452.6 Therms.

The heat to be supplied by the gas will be: $\frac{145.2}{.70}$ = 2074.3 Therms.

The method of figuring floor loss is possibly open to some criticism, but is adopted here for the sake of simplicity in an example that is being used rather to illustrate the economics of heat conservation rather than the calculation of heat loss.

The cost per season will be $207.43 for the house as set up without any particular attempt at heat conservation.

We are now ready to study the possible heat savings. Table B shows the cost of various conservation measures, both gross and net, the saving in heat, the saving in operating costs and the return on the gross and net costs. Now with the concrete example before us we can discuss each saving and endeavor to show what return we may expect it to yield upon the money invested in it.

It is first necessary to point out that the return on our investment in many cases depends upon whether we plan for the conservation measure before the house is built or adopt it later. If we know we are going to use insulation, we can install a smaller boiler and less radiation, and deduct the saving on heating plant from the cost of insulation, arriving at a net cost much lower than the gross cost of the insulation. If, however, our plant is already installed, we cannot recover anything on the excess capacity that will exist after insulation is put in, and we must calculate our return on the gross cost of insulation or whatever other conservation measure we are considering.

The question of the efficiency of weatherstripping, has, also, been very much discussed. There still remains a considerable amount of uncertainty in the data about window leakage. It is not within the scope of this report to attempt to discuss the

(Continued on Page 101)

TABLE B
Summary of Possible Heat Savings, Typical House

	First Cost Gross Dollars	Savings B.t.u. Maximum Hour	Savings B.t.u. Per Degree Per Day	Saving Per Cent of Total Maximum Hour	Saving Per Cent of Total Per Degree Per Day	Saving in Heating Plant Cost Dollars	Net First Cost Dollars	Annual Gross Annual Saving Operating Cost	Annual Depreciation Operating Expense Dollars	Annual Operating Saving Dollars	Return on Net Investment Per Cent	House Built, No Saving in Heating Plant: First Cost Dollars	House Built, No Saving in Heating Plant: Return on Gross Cost Per Cent
Weatherstripping	100.00	12740	672	11.8	1.6	69.00	31.00	4.40	0.00	4.40	14.	120.00	3.7
Double windows and storm doors	100.00	25368	4982	23.6	12.1	121.00	-21.00	35.25	13.00	22.25		120.00	18.5
Insulation in walls No. 1....	196.00	22540	7728	21.	18.9	107.00	89.00	51.14	0.00	51.14	57	260.00	19.6
Insulation in walls No. 2....	260.00	12810	4490	12.	14.0	61.00	199.00	30.00	0.00	30.00	15.		
Insulation in roof No. 1.....	86.00	10584	3629	10.6	11.2	51.00	35.00	24.00	0.00	24.00	68.6	115.00	20.9
Insulation in roof No. 2.....	115.00	6050	2073	5.6	6.4	30.00	85.00	14.00	0.00	14.00	16.5		

Insulation No. 1—4-inch rock wool—cost if placed when house is built 12 cents per sq ft. Cost if blown in later 16 cents per sq. ft.
Conductance .27 B.t.u. per sq. ft. per degree per inch.

Insulation No. 2—A board insulation one inch thick, used as plaster base costing 16 cents per sq. ft.
Conductance .34 B.t.u. per sq. ft. per degree per inch.

Sales Opportunities in Remodeling Temperature Control Jobs

Fig. 1 — This combination photo and diagram shows a small temperature change at the floor but extreme changes near the breathing level with weather changes, when the conventional thermostat merely is lowered to the level above the baseboard

LAST winter, a friend of one of our engineers called us to ask if we could give him some assistance towards getting a better degree of temperature control in his home. This was about the time we were concluding a study of Temperature controls, so several of us went to his home to go over the conditions.

The home is better than ordinary frame construction, although uninsulated, having eight rooms of about the usual size. The owner, a successful manufacturer, his wife and one servant are the only occupants. First, we listened to the owner's story.

Until he bought this home about two years before he had always had coal-fired heating equipment without any automatic control whatever. When he moved to this house and found it was heated by an oil burner he was very much pleased, and even though it was a very early design high-low oil burner, it was automatic heat and he thought it was mighty fine through that first winter. But the following summer he remodeled the home, putting in an up-to-date gas fired heating plant. The heating installation had been beautifully made and everything was quite in order.

The engineer who wrote this article tells how a perfectly remodeled heating plant did not give truly automatic heat because the control equipment also was not brought up to date. A large field of sales effort is indicated

He told us that there was too much variation in room temperature and that there were many times when he felt cold and yet there would be no heat coming up. It was the same old story but was interesting in that he did not realize that he himself has changed. In the hand-fired coal heating days he realized early that he was not much good at firing to maintain comfortable conditions, so had later on employed a janitor. After that he hadn't complained because there was no physical effort on his part to fire the equipment and the house was much more comfortable than it was when he was taking care of it. Further than that, there usually was a certain amount of heat coming up, and whether there was too much or too little, the temperature changes took place over a comparatively long period. When the too hot or too cold times occurred there was usually some pretty good explanation for it—for example, that it

was unusually cold or that the janitor had been late that evening, or that they hadn't handled the draft just right.

At first he was tickled with his oil burner. Now he was enjoying automatic heat. This was no worry or bother and temperatures were much more uniform than they had ever been before. He was proud of his oil burner and talked about it to his friends, but when they visited in his home they gradually began to break down his pride of ownership in automatic heat, to the extent that he became very critical, realizing that there were many things that he would like to have improved. But he consoled himself with the fact that his burner and temperature control equipment represented very early models and probably did not represent the best that could be expected from automatic heat.

OWNER'S IDEAS HAVE CHANGED

Last winter he was stirred to the point of action. He had spent quite a bit to remodel his home and had installed what he had been told was the most up-to-date automatic heating equipment. It had been explained to him that his thermostat would maintain his room temperature within two degrees and he felt sure, on the basis of his previous experience, that this would be entirely satisfactory. Instead of being satisfied, however, he was ready to do a lot of things, most of which would not have helped, in order to get greater comfort, as we could see, so that he could again point out to his friends the superiority of his heating equipment. It was apparent that his attitude toward automatic heating had changed fully and without his realizing it. As he knew more about it and talked with more of his friends he became convinced that he was not going to be satisfied short of perfection.

We tried then to pin him down to tell us just why he was unhappy. It developed that he had been watching a thermometer from day to day and had seen it change as much as three or four degrees. When they were sitting down in the evening their ankles would be cold and there were many times when he would feel that heat should be coming up when the burner would not even be on. Then, too, he could not understand why his upstairs bedroom would be cold on evenings when he had a fireplace fire.

We had had enough, so we started to analyze his conditions. We were satisfied with the heating plant and burner installation and came to the conclusion that all of his troubles were centered about his temperature control. It was a high grade plain instrument of the conventional type, which later on when tested in the laboratory proved to have a differential of just slightly over one and one-half degrees. It was located on an inside wall about five and one-half feet above the floor in his living room. While it was normally free from any outside influences of either heat or cold, it was in such a position that it could absorb several degrees of heat from the log fire on the hearth. When this was pointed out to him it was apparent why the rest of the house would be cold on the nights that he had a hearth fire, because the thermostat would remain satisfied, the living room would be warm but the rest of the house would be without heat.

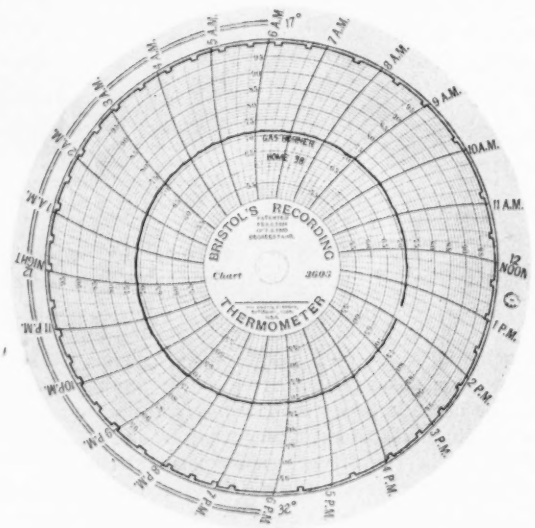
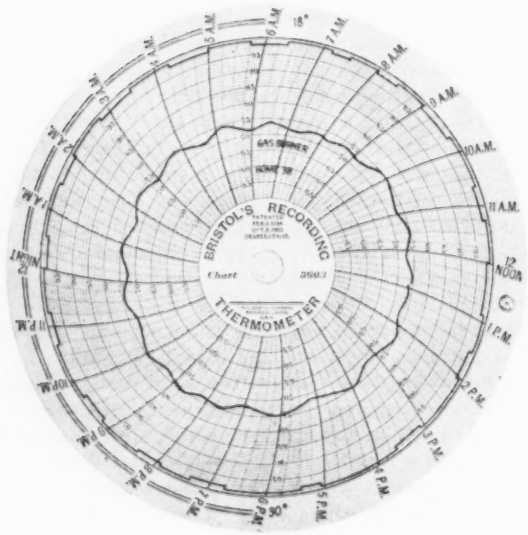


Fig. 3—Chart of recorded temperatures showing conditions and burner periods of operation after the temperature control system had been remodeled

Fig. 2—Chart of recorded temperatures showing both the temperatures complained of by the owner and burner periods of operation before remodeling



On the two or three succeeding days we recorded the temperature changes in the living room under the same conditions as had existed before. One of these charts is reproduced herewith, Fig. 2. The temperature changed about three degrees per cycle, or from a minimum of about 72 deg. Fahr. to a maximum of about 75 deg. Fahr.

Near the outer edge of this chart is a line which re-

(Continued on Page 90)

"There are several factors which enter into hospital room installations and which ordinarily do not occur in common types of air conditioning"

How Hospital Rooms are Air Conditioned

By Harold L. Alt

The first part of this article covers a discussion of the heat transmitting qualities for the various types of wall construction. Also, it tells how to figure the coefficient of heat transmission for built-up walls, where the coefficients are known. The second part covers a hospital problem and solution.

In order to calculate the amount of heat coming in through the walls, partitions, ceiling, floor and glass it has been seen that it is necessary to know the heat coefficients for the material and the thickness of the material; glass being all at practically the same thickness usually only has one coefficient used, viz., 1.1. For wall constructions of standard type the coefficients shown in Table One undoubtedly will prove a help while coefficients for interior partitions are given in Table Two. The coefficients for common floors, ceilings and roof constructions will be found in Table Three.

The rule is to take the net wall area (after the windows and doors have been subtracted) for each wall and to multiply this by the coefficient for that type and thickness of wall and by the maximum temperature difference to be maintained on the two sides of the wall. Then take the glass and door area, multiply this by the coefficient for glass (1.1) and by the same temperature difference used for the wall; repeat this for all four sides of the room, for the floor and for the ceiling or roof. This will give six areas to be computed for each room in the installation under consideration.

While the wall transmission of heat is liable to be one of the minor factors in most installations of air conditioning, this transmission should be figured with reasonable accuracy in order to be sure that sufficient allowance is made to include this portion of the load and at the same time not to have this allowance excessive and more than ever will be required. Tables One, Two and Three quote the coefficients for the more common types of construction, and an effort will now be made to explain how these coefficients are developed and how new coefficients for combinations not included may be calculated when this proves to be desirable.

The flow of heat through a wall must overcome the resistance of the wall surface where the heat enters the wall, the wall material itself and the resistance of the surface where the heat leaves the wall. This may be likened to the flow of water through a pipe with a fine screen on the entrance and exit of the pipe; first the water has to overcome the resistance of the entering screen in order to get into the pipe, then it has to overcome the resistance of the pipe in order to flow through the pipe and then it has to overcome the resistance of the screen on the exit in order to get out of the pipe. An air space in the wall acts the same as a stone in the pipe and adds resistance to the flow.

To the practical man, greater interest is attached to the matter of how much heat will flow through a wall than there is to the matter of the complex scientific actions that the flow of heat involves; in order to simplify this discussion the flow of heat will be termed the wall "transmission" when the flow through the material only without the surface or air space resistance con-

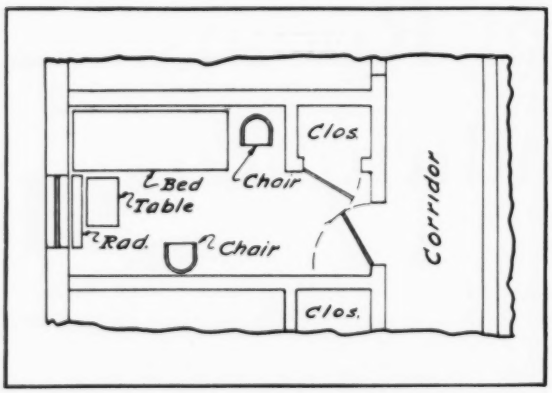


Fig. 1—This plan shows a typical private hospital room which our problem requires to be air conditioned

sidered. The flow of heat including the surface and air space resistance is—of course—the wall coefficient and will be termed "total transmission" here. Scientifically a fine distinction is made in wall transmission by the use of the term "conductivity" which means the flow of heat through a homogeneous material (material all of the same composition) and "conductance" which is the same flow of heat through a wall composed of different materials. Both of these terms refer to heat flow without the surface and air space resistances just as the term transmission does.

Heat flow or transmission ordinarily is measured and expressed in terms of Btu. per hour for one square foot in area and 1 in. in thickness of the material for a temperature of 1 deg. Fahr. difference between the two sides. In special cases such as with roofing or with lath and

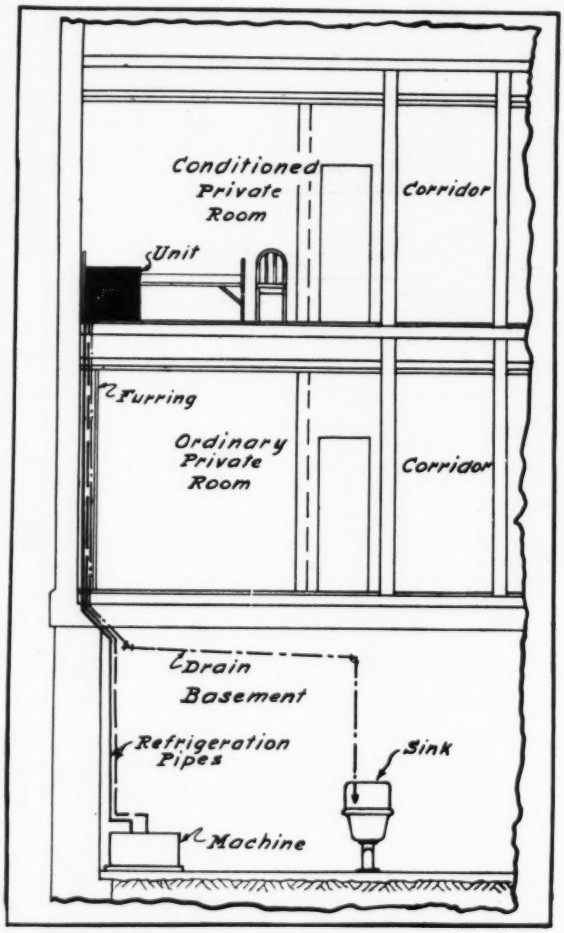


Fig. 2—Location of the machine for hospital room unit and connection piping for same

plaster or with hollow blocks and tile, the flow is measured for the wall *as constructed,* or *"as laid,"* and regardless of the thickness that may be involved. This concession is made on the basis of simplifying and making the results more practical and more easily handled. Thus if a certain material has a transmission of 16 Btu. on an area of 1 sq. ft., with a thickness of material of 1 in., and with 4 deg. Fahr. temperature difference between the two sides, the material may be said to have a transmission of 16 Btu./4 or 4 Btu. (for 1 deg. Fahr. temperature difference).

As all materials conduct heat to a certain extent so also do all materials resist heat flow to the opposite extent. The resistance may be expressed by the reciprocal of the transmission or

Resistance equals 1/T

when T is the transmission. Thus, in the previous instance where the transmission was 4 Btu. the resistance or "R" is

1/4 or ¼ or 0.25

The total resistance of a wall to heat flow is the sum of the outside surface resistance, the wall material resistance, the resistance of air spaces (if any) and the inside surface resistance.

SURFACE RESISTANCE

The transmission for the outside surface of a wall which commonly is used is 6 Btu., this transmission being better than the inside surface due to the wind action commonly occurring on outside walls which increases the rate of heat removal from the surface. Therefore the outside surface resistance is one divided by six or

1/6 which is 0.167

while the transmission for the inside surface is much less due to still air—or practically still air—conditions in the interior of a building so that the transmission commonly used on the inside wall surface is 1.65 Btu. giving an inside surface resistance of one divided by 1.65 or

1/1.65 which is 0.606

When one or more air spaces are included in the wall construction the transmission usually assigned to them is 1.10 Btu. although this varies some with the width of the air space and the temperatures across the air space. It probably is quite accurate enough for all ordinary purposes to assume 1.10 as approximating the conditions occurring with air conditioning work and, if this is taken as the transmission, the resistance, of course, will be one divided by 1.10 or

1/1.10 which is 0.909

If the *transmission* can be turned into the *resistance* by taking the *reciprocal of the transmission,* in like manner the *resistance* may be changed back to the *transmission* by reversing the process and taking the *reciprocal of the resistance.* For example, in the previous case where the transmission was 4 Btu., this was changed to the resistance by taking the reciprocal of 4 making the resistance ¼ or 0.25. It is obvious that this resistance

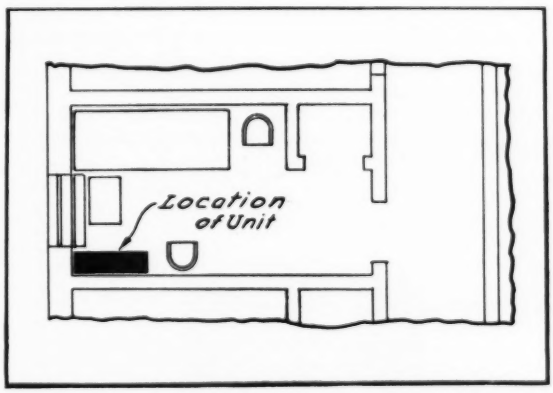


Fig. 3—The location of the conditioning unit is indicated in this plan which corresponds to the lay-out of Fig. 1

may be turned back to the transmission by again taking the reciprocal of ¼ which is 1/0.25 or 4 Btu.

From this it follows that if the resistances of all parts of a wall are known that the *sum of these resistances* constitutes the *total resistance of the wall* and may be changed back to the total transmission (*including the surface resistances*) thus giving the "total transmission" (or *coefficient*) for the wall. The only thing to be careful about is that in cases where the transmission is for a 1 in. thickness, and a greater thickness exists, the *resistance of the greater* thickness will not be *one* divided by the transmission but will be the *actual thickness* divided by the transmission. Thus, in the previous case where the transmission is 4 Btu. for 1 in. thickness, the resistance of the same wall material for an 8-in. wall would be 8/4 or 2. This will be illustrated in the following.

In Table Three-A are given some of the transmissions for more common materials of construction and with

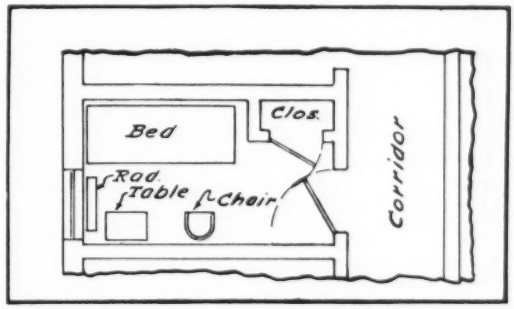


Fig. 4—Lay-out of hospital room with no space for the installation of the unit

the use of this table the coefficient for a common 12-in. brick wall will now be calculated.

Assuming that the coefficient for a common 12-in brick wall is to be calculated the following *transmissions* are known:

Outside surface 6.00
Inside surface 1.65
Common brick (Table Six).....5.00

Then the *resistances* of the different parts of the wall will be

Outside surface.....1/6 or 0.167
Inside surface .....1/1.65 or 0.606
12 in. of brick.....12/5 or 2.4

and the sum of all the resistances amounts to

Outside surface 0.167
Inside surface 0.606
12 in., brick 2.4

Total resistance 3.173

while the total transmission or coefficient will be the reciprocal of this or

1/3.173 or 0.315/Btu.

Had this wall included a 4-in., air space along with the 12 in. of brick the resistance of the air space must be added to the other resistances making

Previous resistance 3.173
Air space, 1/1.10 or.....0.909

Total resistance with air space..4.082

which gives a total transmission or coefficient of

1/4.082 or .....0.245 Btu.

which indicates the transmission of the wall is lowered by the insertion of the air space from 0.315/to 0.245 Btu. per sq. ft., per hour per degree difference in temperature between the inside and outside.

When a wall is composed of more than one material the resistances for all of the materials are totaled and the transmission taken as the reciprocal of the total resistance. If insulation is included then the insulation resistance also is added. If several air spaces are included the sum of the resistances of the air spaces is added. Thus the coefficient for a wall composed of 4 in. of face brick, 8 in. of common brick, an air space, 4 in. of tile, another air space, 1 in. of cork and cement plastered on the inside would be computed as follows:

Material	Transmission	Resistance	Decimal
4 in. Face Brick	9.20	4/9.20	0.434
8 in. Common Brick	5.00	8/5.00	1.600
Air Space	1.10	1/1.10	0.909
4 in. Tile	1.00	1/1.00	1.000
Air space	1.10	1/1.10	0.909
1 in. Cork	0.30	1/0.30	3.333
Plaster—Cement ½ in.	12.00	0.5/12	0.042
Outside surface	6.00	1/6	0.167
Inside surface	1.65	1/1.65	0.606
Total resistance			9.000

Coefficient 1/9.00....0.111 Btu.

It will be noted in the above that the transmissions for all of the items except cork were obtained from Table Six while the transmission for cork was obtained from Table Three-B which covers many of the more common types of insulation. Also that the transmission for tile of 4-in. thickness as given in Table Three-A was "as laid" so that the resistance is 1/1.00 and not 4/1.00.

LEAKAGE INTO AIR CONDITIONED ROOMS

In central systems it is not usual to consider any leakage into the room around the windows and doors as is done when computing radiators owing to the fact that the central system usually keeps a plenum or air pressure on the inside of the room so that all leakage is *outward* and *not inward*. In the cases where unit air conditioners are used, however, there is no additional air supplied to the room—on the contrary, the room air is simply rotated through the unit and passes round and round the circuit illustrated by the arrows in the various cuts: under this condition a certain amount of leakage of air from the outside must be expected. It is customary in heating work to figure one air change in a room with one wall exposed to the outside, 1½ to 2 air changes in a room with two walls exposed to the outside and 2 to 3 air changes in a room with three walls exposed to the outside.

When the term "air change" is used it means that the cubic air content of the room completely changes every hour; two air changes mean that the cubic air content of a room changes twice in one hour and three air changes mean that the cubic air content changes three times in the same period. This air change usually is the result of inward leakage of outside air and by cubic content is meant the volume of air contained in the room. This of course is obtained by multiplying the length, by the width, by the height (all in feet), the result obtained being the cubic contents, or cubic feet of air in the room.

Thus in an office having dimensions 14 ft. long, 12 ft. wide and 10 ft. high would have a cubic content of

$$14 \times 12 \times 10 \text{ or } 1{,}680 \text{ cu. ft.}$$

and, if this office has one wall exposed, the leakage which might be expected would amount to one air change or

(Continued on Page 94)

Table One

Co-efficients or Heat Transmission of Common Outside Walls

Construction	Thickness	Co-efficient
Brick, Plain, No Plaster	8″	0.50
	12″	0.38
	16″	0.28
Brick with ½″ Plaster on Wall	8″	0.46
	12″	0.34
	16″	0.27
Brick, Furred and Plastered, 1 Side	8″	0.30
	12″	0.24
	16″	0.20
Hollow Tile, Plain or Stucco, 1 side	8″	0.40
	10″	0.39
	12″	0.30
	16″	0.25
Hollow Tile, Plain or Stucco outside, Plastered on Tile inside	8″	0.37
	10″	0.36
	12″	0.29
	16″	0.24
Hollow Tile, Plain or Stucco outside, Furred and Plastered inside	8″	0.27
	10″	0.26
	12″	0.22
	16″	0.19
Concrete, Plain or Stucco 1 side	6″	0.79
	10″	0.62
	16″	0.48
	20″	0.41
Concrete, Plain or Stucco 1 side and Plastered inside on Conc	6″	0.70
	10″	0.57
	16″	0.44
	20″	0.39
Concrete, Plain or Stucco 1 side and Furred and Plastered inside	6″	0.39
	10″	0.34
	16″	0.29
	20″	0.27
Concrete Blocks, Plain	8″	0.56
	12″	0.49
Concrete Blocks, Plastered inside	8″	0.52
	12″	0.46
Concrete Blocks, Furred and Plastered inside	8″	0.32
	12″	0.30
Cinder Blocks, Plain	8″	0.42
	12″	0.37
Cinder Blocks, Plastered inside	8″	0.39
	12″	0.35
Cinder Blocks, Furred and Plastered inside	8″	0.27
	12″	0.25
Stone, Plain	8″	0.71
	12″	0.58
	16″	0.49
	24″	0.37
Stone, Plastered 1 side	8″	0.64
	12″	0.53
	16″	0.45
	24″	0.35
Stone, Furred and Plastered 1 side	8″	0.37
	12″	0.33
	16″	0.30
	24″	0.25
Frame, Wood Siding, Clapboards, or Shingles outside	6″	0.25
Frame, Stucco outside	6″	0.30
Frame, Brick Veneer outside	10″	0.27

From A. S. H. V. E. 1934 Guide.

255 Attend Summer Meeting of A. S. H. V. E.

PRESIDENT CHARLES V. HAYNES opened the semi-annual meeting of the American Society of Heating and Ventilating Engineers in the auditorium of the Inn at Buck Hill Falls, Pa., on Wednesday morning, June 20, with a large attendance, 255 members and guests.

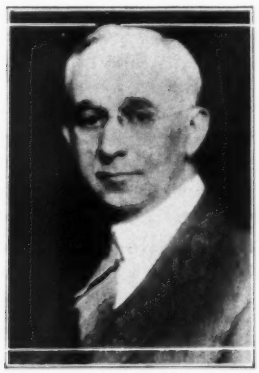
Preparatory meetings by the Society's council and several of its committees were held on Tuesday, June 19, but the regular meeting began Wednesday morning, June 20, and lasted till Friday afternoon, June 22. The natural beauty of the surroundings of the Inn, where the convention was held, the well-balanced program, successfully combining business and pleasure, a series of technical papers of interest to every member of the Society, and the joint session with the American Society of Refrigerating Engineers, made the meeting one that will long be remembered by everyone in attendance.

President Haynes introduced Wm. P. Culbert, president of the Philadelphia Chapter, which was the host at this meeting and had done everything possible to make it a success. Mr. Culbert explained all the events on the entertainment program.

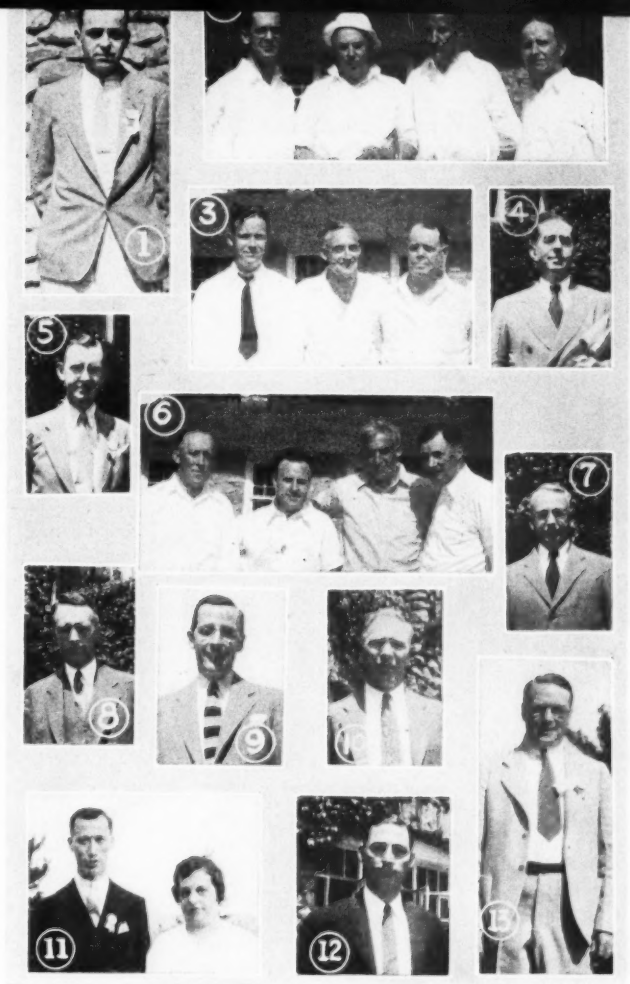
In his response President Haynes on behalf of the Society praised the work of the members of the Philadelphia Chapter, and he added that he knew that everybody was glad that they had come to the meeting, now that they knew what was in store for them.

"Criteria for Industrial Exhaust Systems" was the title of the first paper. Its author, J. J. Bloomfield of Washington, D. C., suggested to the Society that its members could go into this dust exhaust work profitably. There is very little engineering knowledge in this field today outside of tests made, and there is all kinds of work to be done on this subject of dust removal. He hoped that the Society would become actively interested in this work.

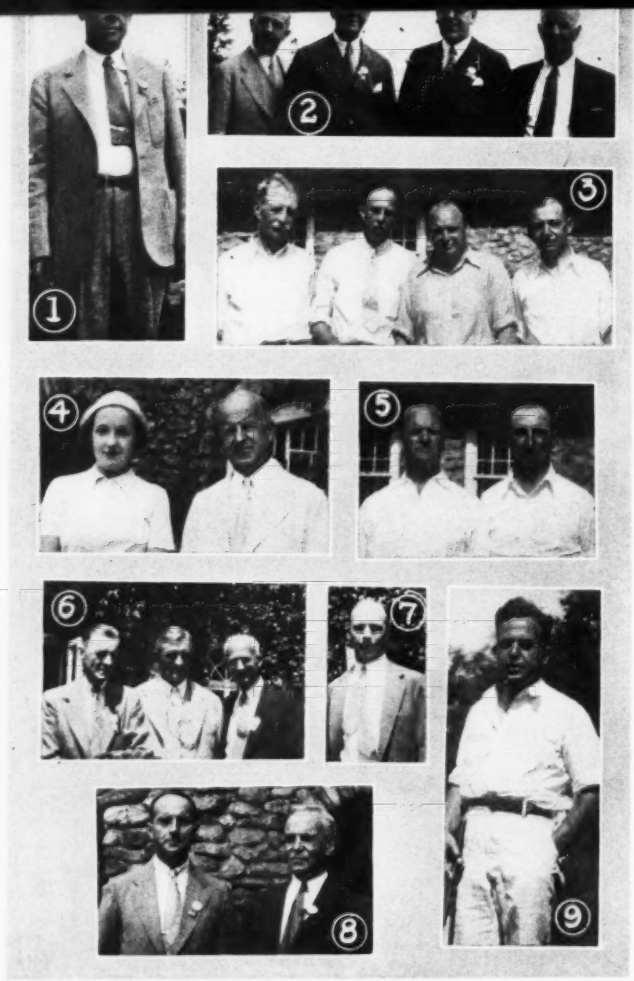
This paper was discussed by J. J. Aeberly of Chicago, Neil D. Adams of Rochester, Minn., and Mr. Cook.



President Charles V. Haynes of A. S. H. V. E.



(1). William P. Culbert, Culbert-Whitby Co., Philadelphia, president of Philadelphia chapter and chairman of golf tournament. (2). W. E. Voisinet, Buckeye Blower Co., Columbus, O.; M. C. Beman, Beman & Candee, Buffalo; H. F. Hutzel, Chase Brass & Copper Co., Waterbury, Conn.; T. A. Novotney, National Radiator Co., Johnstown, Pa. (3). N. P. Fenner, Hoffman Specialty Co., Waterbury, Conn.; W. Roy Eichberg, president of Carolina Sheet Metal Corp., Philadelphia and chairman of entertainment committee; F. H. Gaylord, Chicago, Hoffman Specialty Co. (4). John M. Frank, Ilg Electric Ventilating Co., Chicago. (5). Charles W. Stewart, Hoffman Specialty Co., Waterbury, Conn. (6). H. Q. Cadman, Haynes Selling Co., Philadelphia; D. C. Simpson, Owens-Illinois Glass Co., Toledo, O.; E. H. Gurney, Gurney Foundry Co., Toronto, Can. and J. F. McIntire, U. S. Radiator Corp., Detroit. (7). R. W. Barcus, Reading Iron Co., Philadelphia, Pa. (8). H. P. Gant, Carrier Engineering Co., Philadelphia. (9). A. A. Miller, branch manager, National Radiator Co., Philadelphia. (10). John Howatt, Chicago, first vice president. (11). Mr. and Mrs. J. Everetts, Jr., New York City. (12). Warren Webster, Jr., Warren Webster & Co., Camden, N. J. (13). R. C. Bolsinger, Philadelphia, general chairman of arrangements



Mr. Adams wanted to know if any bacterial content study had been made, and he was told that none had been made. Mr. Aeberly and Mr. Cook asked for information about impingers.

The second paper, "Dry Bulb vs. Effective Temperature Control," was read by its author, A. E. Beals of Norwich, N. Y., a non-member.

F. C. Houghten, W. H. Carrier, Walter L. Fleisher and F. C. McIntosh discussed this paper. Mr. Carrier disagreed with several phases of this paper and gave his version of the subject. Mr. Fleisher felt that the paper as read condemns various things without knowledge. Many statements in the paper are unwarranted, he said, and it was his opinion that it was based on theory and not on knowledge of the art or practical experience. "There is too much generalization on this subject, while actual facts and figures can be of more value," he added.

The author stated that the paper was presented as a subject for discussion, but he added that he recommended the methods as presented.

President Haynes at this point stated that no verbatim report was being taken at this meeting and that all members were requested to send the Secretary written reports of their individual oral discussions on the floor.

Axel Marin of Ann Arbor, Mich., a non-member, submitted the third paper, "Influence of Stack Effect on the Heat Loss in Tall Buildings." Owing to the fact that Mr. Marin was unable to be present, J. H. Walker read the paper, which presented results of investigations made in the Penobscot Building, Detroit, Mich., to determine the influence of stack on the heat loss of a tall building.

Col. D. S. Boyden discussed this paper.

"Wind Velocities Near a Building and Their Effect on Heat Loss," by F. C. Houghten, J. J. Blackshaw and Carl Gutberlet, was the fourth paper. It was very interesting and caused considerable discussion by Messrs. Walker, Williams, Fleisher and W. W. Timmis, the consensus being that it was important that the Society compile more accurate data on this subject.

At this point the members rose and remained standing in silence several moments in memory of Dean Paul F. Anderson, past president of A. S. H. V. E., who died recently at his home in Lexington, Ky. A memorial resolution was presented and read by J. I. Lyle.

(1). Colonel D. S. Boyden, Boston, Mass. (2). W. A. Evans, Carrier Engineering Corp. and George Barr, Aerofin Corp., both of Newark, N. J.; N. A. Hollister, Trane Co., LaCrosse, Wis.; H. D. Jackes, Aerofin Corp., Newark, N. J. (3). A. W. Luck, Reading Heater & Supply Co., Reading, Pa.; A. E. Kriebel, Haynes Selling Co., Philadelphia; H. H. Erickson, Philadelphia, transportation and publicity committee and H. C. Black, Philadelphia, chairman of reception committee. (4). Mary J. Driscoll and W. H. Driscoll, past president, both of New York City. (5). Fred A. Fenton, Thos. Devlin Mfg. Co., New York City and F. C. Weber, Newark, N. J. (6). L. A. Harding, Buffalo, past president; W. H. Carrier, Newark, N. J., past president, and C. V. Haynes, Ardmore, Pa., vice president of Hoffman Specialty Co., and president of A. S. H. V. E. (7). I. C. Jennings, Norwalk, Conn. (8). William H. Severns, University of Illinois, Urbana, Ill. and H. A. Ward, Utica, New York. (9). M. F. Blankin, president, Haynes Selling Co., Philadelphia, and chairman of banquet committee

PLAN CHICAGO MEETING IN 1936

John Howatt of Chicago, first vice president of the Society, presented a resolution concerning its annual meeting in 1936, with the result that it was decided to hold this meeting in Chicago at the time of the Heating and Ventilating Exposition, which is scheduled to be held in that city in 1936.

Wm. H. Driscoll of New York City acted as toastmaster at the Get-together Luncheon on Wednesday noon, and Col. Willard T. Chevalier, vice president of McGraw-Hill Publishing Co., delivered an address on "Examining the Construction Recovery Program," in which he stated that the matter of recovery is a three-fold problem: First, relief; second, recovery, and third, reconstruction. He likened the recovery problem to an earthquake with its panic, then recovery after the first shock, and then reconstruction. The first relief is a necessity, and this should be followed by recovery and reconstruction as soon as possible. We must rebuild. Our first obligation is to re-establish recovery before reconstruction can take place. Col. Chevalier looks forward to recovery with confidence. As the construction industry is of special interest to all the members, he explained somewhat in detail the NRA and gave his opinion about its ultimate outcome. He told about the Public Works program and what it means, the housing bill which will stimulate building and strike at the mortgage racket. He also spoke about modernization and remodeling and

SAYS THE CLASSIFIED TELEPHONE BOOK

When a prospect turns to the 'yellow pages' of the telephone book, *he means business.* He is getting ready to buy.

If you want his or her business, you should be there—in the 'yellow pages'. With an advertisement, or a listing, or both. The classified directory brings prospects and dealers face to face—which means new sales.

Remember that representation in the telephone book is more than just an advertisement. The classified directory is a *reference book* that stays on the job every day in the year. It has a place in all worth while homes and is used and referred to frequently.

If you sell a nationally advertised brand, see that your name is listed in the classified *under the trade mark of that brand.* This type of listing, known as "Where to Buy It" Service, is illustrated at the right. If the manufacturer has not yet arranged to list his trade mark, ask him to do so. It will be well worth while, for "Where to Buy It" is producing highly profitable results for dealers in many lines of business.

Ask your Directory Representative for full information about the various types of listings available in the classified.

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Oil Burners—Continued

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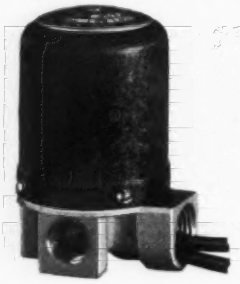
Economy with Cleanliness. Efficiency with Comfort. Automatic Oil Heat at its best. A Rotary Burner with Patented Wall-Wiping Flame. Also IDEAL FLUID HEAT Burner-Boiler Units.

Fluid heat

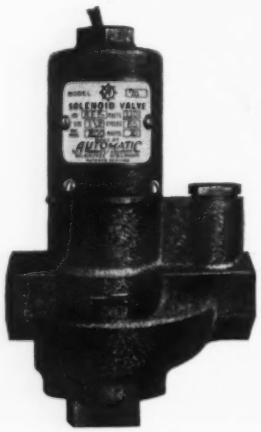
"WHERE TO BUY IT"

Fluid Heat Co of Western Mass
376 Worthington. 3-0541

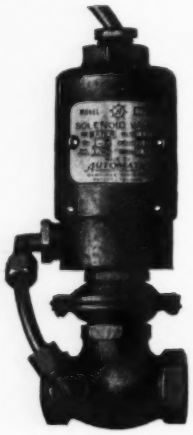
VALVES FOR AIR CONDITIONING



No. 71 Water
No. 73-R Refrig.



No. 70 Refrig.



No. 76 Water

DEPENDABLE CONTROL that's what these husky solenoid valves give you on air conditioning and refrigeration installations. Designed with an impact type plunger and completely sealed coil. Nos. 71 and 73-R have forged brass bodies. Nos. 70 and 76 are based upon the by-pass principle, resulting in very low power consumption.

Leading manufacturers have adopted these valves as standard because they know they are right. These valves are compact, neat and dependable. Investigate today — write for prices and specifications.

AUTOMATIC PRODUCTS COMPANY
121 NORTH BROADWAY
MILWAUKEE

he concluded by stating that we are on the threshold of our greatest opportunities.

W. H. Carrier acted as chairman of the joint session, held at the Inn on Thursday morning, and introduced A. R. Stevenson, president of the American Society of Refrigerating Engineers, and Chas. V. Haynes, president of the American Society of Heating and Ventilating Engineers.

JOINT SESSION OF A. S. H. V. E. AND A. S. R. E.

Two A. S. R. E. papers were read. The first was on "The Water Vapor Centrifugal Compressor," by Paul Bancel. It covered the subject of water vapor refrigeration for higher levels, principally for air conditioning work in sizes of 50- to 300-ton machines. His paper was illustrated by slides. The second paper was on "Electric Rate Making for Small Air Conditioning Units," by D. W. McLenegan. This paper was presented as a mass solution for installation of residential air conditioning units.

Thomas S. Holden, vice president of F. W. Dodge Corp., thereupon delivered an address on "The Re-employment of the Construction Industry," in which he said in part:

"We have an almost idle construction industry in this country adding its members to the unemployed. It has suffered more than any other industry. It amounted to 9 billion dollars in 1928, and to less than 2 billions in 1933. The housing bill is one of the most effective means of re-employment because it offers sound investment for idle money. This country is not over-built but over-financed. A new kind of construction program is needed. The building boom did not collapse because of over-building, but because of financial mismanagement and collapse of credit. The Federal Government has taken several measures to inaugurate a building program: The NRA National Housing Act, the Public Works program, the Tennessee Valley project, Slum clearance, the National Planning Board and its activity. A survey being made in 64 cities by the government shows in reports received so far that there is a definite need for new homes. Keeping building costs down is one of the functions of the National Housing Act. If we learn to use credit and continue to use government help, the effect of the Housing Act indicates that improvement is just beginning, and we can look for better results next year and thereafter."

The next paper, "Operating Results of an Air Conditioning System Compared with Design Figures," by John R. Hertzler, described the recently installed air conditioning system in the Union Dime Savings Bank in New York City.

The discussion of this paper was led by W. H. Carrier, who asked the author to investigate and try to determine the temperature at the ceiling of the rooms in the building under consideration.

"What Is the Cooling Load Factor in Air Conditioning?" by John Everetts, Jr., was an excellent paper. In discussing it, Walter L. Fleisher said that "the factors presented are of real value to utilities companies for determining costs in their respective territories."

Friday morning session opened with consideration of

(Continued on Page 88)

Automatic Heat and Air Conditioning Questions

AMOUNT OF OIL IN HORIZONTAL TANKS

To the Editor:

Will you please figure out the number of gallons of oil per inch of height in the tank shown in Fig. 2 and which is 9 ft. 6 in. long and 35½ in. in diameter set horizontally?

New Hampshire. C. E. W.

To the Reader:

In reply to your question about the contents of a cylindrical oil tank laid flat and 35½ in. diameter by 9 ft. 6 in. long we would advise that the contents of any cylindrical tank is found by taking the area of the end and multiplying by the length of the tank which will give the volume in cubic feet which may be changed to gallons by multiplying by 7.48 as there are 7.48 gallons in a cubic foot. Usually the multiplier of 7.5 is used as the gallons per cubic foot for the sake of even figures. This will give the correct capacity for a tank with straight ends and for a tank with one head bumped and one head dished.

In your case we are assuming that the heads are either flat or that one is bumped and the other dished and that the 9 ft. 6 in. is the length of the shell which is the usual way of speaking of tank lengths. Then the cubic contents when the tank is full will be

$$\text{Area of Head} \times \text{Length} \times 7.48$$

or

$$\frac{35.5 \times 35.5 \times 0.7854 \times 9.5 \times 7.48}{12 \times 12}$$

or

$$6.85 \times 9.5 \times 7.48$$

or

485 gal.

When the tank is partially full the contents may be calculated for any depth of oil in the tank but it is quite a long and complicated mathematical procedure which must be gone into for each and every depth which it is desired to know the gallons equivalent. The reason for this is the fact that the volume for the first inch of depth is relatively small compared with the volume for an inch of depth up near the middle of the tank so that it cannot be said that another inch depth adds a certain number of gallons to the oil as it all depends at what height on the tank this inch of depth is taken.

A much simpler and more practical way for approximate use is shown in the curve given in Fig. 2 which eliminates a great deal of the calculation which otherwise would be involved. This curve has a scale along the bottom which reads in "percentage of the vertical diameter of the tank" which the oil covers and the scale on the left hand side reads in the "percentage of the total contents" which is in the tank.

To illustrate the use of this curve in your particular case let it be assumed that the level of the oil when you measure it is 23¾ in. from the bottom of the tank. Then the percentage of the vertical diameter of 39½ in., which is occupied by the oil is

23¾ in./39½ in., or 0.60, which is 60 per cent.

On the bottom scale find 60 per cent and run up the 60 per cent line vertically until you strike the curve and

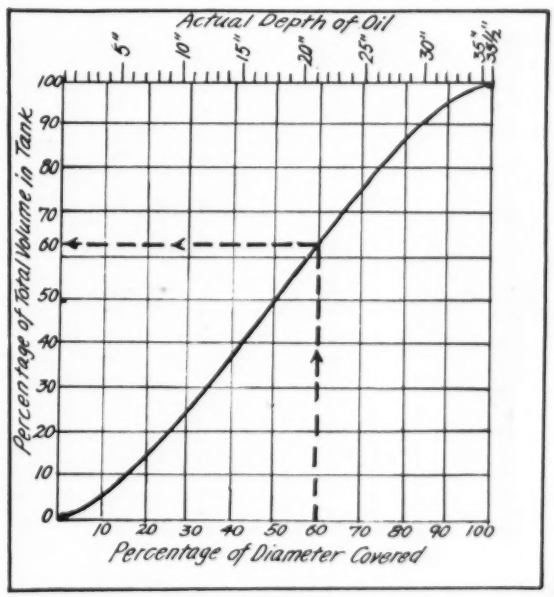


Fig. 1

then run horizontally to the left until the percentage of oil is found on the left hand scale where it shows that 61½ per cent of the total oil is in the tank and

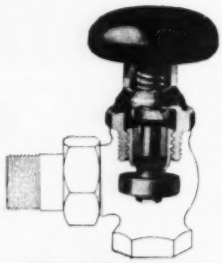
485 gal. × 62½ per cent is 303 gal.

If this curve is studied carefully it becomes evident that for a rise in the oil level of the lowest 10 per cent

"MILWAUKEE" MODERNIZATION UNITS

RADIATOR VALVE BONNET REPLACEMENT ASSEMBLIES

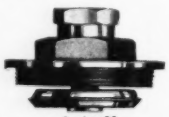
Made in a variety of types to fit practically all makes and sizes of packed and packless Radiator Valves. Not necessary to break line connections when making installation. Simply remove the old bonnet and replace with a "MILWAUKEE" Specialized Assembly. The old body connections remain undisturbed.



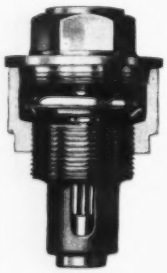
"Milwaukee" Specialized Bonnet Replacement Unit

RADIATOR TRAP REPLACEMENT UNITS

"MILWAUKEE" Specialized Trap Adaptors, installed in worn out or inefficient radiator traps of any make, restore new trap operating efficiency and give years of added satisfactory service at a very moderate cost. Made for both diaphragm and bellows type traps.



Series 26 "Milwaukee" Specialized Trap Replacement Unit Furnished with either flat or ball type Monel Seat Disc



Series 28 "Milwaukee" Specialized Angle Valve Convertor

CONVERT OLD TWO PIPE STEAM JOBS

Old type two pipe steam jobs having radiator valves on inlet and outlet ends may be completely modernized by converting into a vapor vacuum system. On the inlet valve a Specialized Bonnet Assembly should be installed and the outlet valve converted into a Thermostatic Trap with a "Milwaukee" Specialized Valve Convertor.

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"Milwaukee" Lines are sold by leading jobbers all over the United States

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Manufacturers of
"Milwaukee" Heating Specialties — "Approved" Bronze Valves
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We are interested in the following modernization units. We will need about..... quantity

Bonnet Assemblies ☐ for ..... size ..... name of maker

Trap Adaptors ☐

Please send us full particulars.

.....

Name ..... Business

.....

Street ..... City ..... State

of the vertical diameter the increase is small and not in proportion to the rise in the oil level; in fact where the oil level has gone up 10 per cent of the height of the tank the contents have only become 5 per cent (5.2 per cent by calculation) and when the oil level has gone up 20 per cent of the height of the tank the oil contents amount to

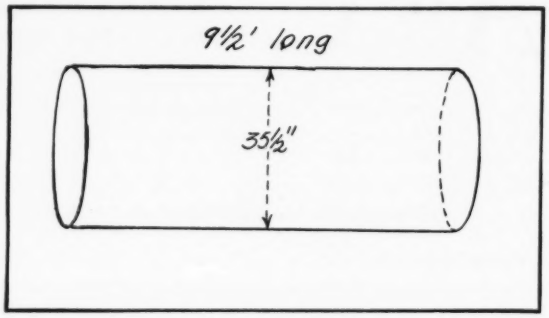


Fig. 2

only 14 per cent of the total (14.2 per cent by calculation) but that when the oil level has risen to the middle of the tank, or 50 per cent of the height, the oil contained is 50 per cent of the total, which is correct as the tank then is exactly half full.

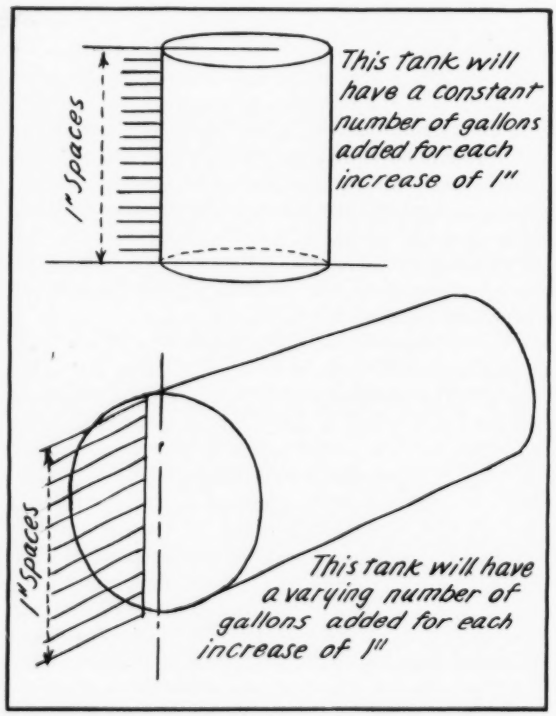

1" spaces
This tank will have a constant number of gallons added for each increase of 1"
1" spaces
This tank will have a varying number of gallons added for each increase of 1"

Fig. 3

This curve may be applied to any diameter of tank as long as the percentage of the vertical height covered by the oil is first computed by dividing the depth of oil by the diameter of the tank and then reading off of the curve

what percentage of the total contents is contained. When a cylindrical tank is stood on end instead of being laid down horizontally, the number of gallons may be computed per inch of height and every inch of oil in the tank will add just that same number of gallons but this is not true when the tank is laid down horizontally as the curvature of the shell gives a varying number of gallons for every inch of height. See Fig. 3.

Savage Arms Now in Air Conditioning

The Savage Arms Corporation, Utica, N. Y., with sales offices at 100 East 42nd street, New York City, and Air Conditioning Industries, Inc., announce that the development, manufacturing and merchandising activities of the latter company, including personnel, and the air conditioning equipment it manufactures, have been taken over by the Savage corporation . This will now be handled as the Air Conditioning Division of the Savage Arms Corporation.

Boeddener Manages Fox Furnace Sales

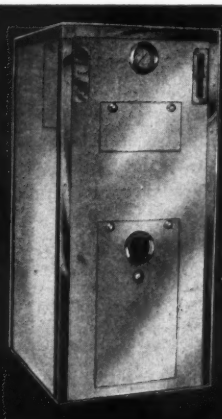
C. A. Olsen, president of the Fox Furnace Co., Elyria, Ohio, announces the appointment of George Boeddener as general sales manager, succeeding Leon A. Selman who died in May. Mr. Boeddener has served the Fox Furnace Co. in various sales capacities for the past several years and is personally acquainted with the heating trade in many sections of the country. His entire business life has been spent in the heating industry, having been associated with the American Radiator Co., and also the National Supply Co., heating supply jobber of Toledo, Ohio. Announcement is also made of the appointment of C. L. Travers as assistant sales manager.

Tests—

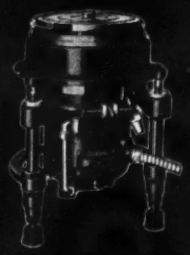
(Continued from Page 67)

(4) The soot produced in starting, rather than the requirements for steady running, will very likely determine the adjustment for air. The temperature of the flue gas depends on the quantity of heat absorbed by the boiler. This, in turn, depends to a considerable degree on the extent and disposition of the heating surfaces. Hence, high gas temperature and high stack loss cannot be laid to the burner, for they can be obtained from a combination of good burner and poor boiler as well as from a poor burner and good boiler. When air leaks are stopped, however, which is a comparatively simple matter, a good burner firing into a good combustion chamber should yield high CO_2 without smoke. Without doubt, the burners of any given make do not do as well in the field as in the laboratory. And it is quite possible that if the burner under present discussion were taken from the field into the laboratory it would do as well there as any.

ARE YOU EITHER OF THESE MEN?



The beautiful new Ideal Fluid Heat Oil Burning Boiler.



Fluid Heat Rotary Wall Flame Burner for conversion jobs.

1. A HEATING CONTRACTOR who is thinking about going into the Oil Burner business.

2. A "GUN" BURNER DEALER who is thinking about selling Rotary Burners, too.

THEN MAIL THE COUPON— Here's your chance to make real money!

THAT'S not just a "come-on" statement. We can prove it. Prove it by the experience of our own dealers. They're making real money—NOW. Because satisfied customers help them make an amazing percentage of their sales. Because an amazing freedom from service calls protects their profits.

Some desirable territories are still open. And we've got a real dealer proposition and a real sales plan that will make real money for you. Mail the coupon at once for full details.

fluid heat OIL BURNER

FLUID HEAT DIVISION, ANCHOR POST FENCE CO.,
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I'm interested. Please send full details of your Dealer Proposition on Fluid Heat.

Name .....

Company .....

Street Address .....

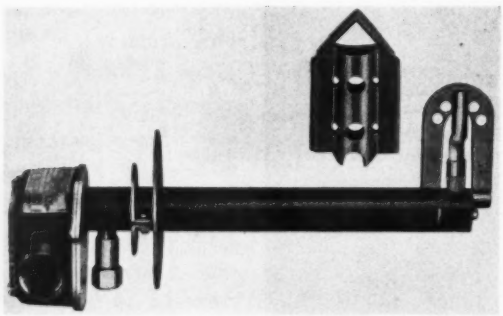
City & State .....

Products FOR Dealers

This section gives a report of the latest news of selected automatic heat and air conditioning products. The general new products section starts on page one hundred eleven.

Pilot Protection for Gas Burner

Here is a unit designed for positive, rapid and dependable automatic pilot protection for gas burning ovens, and boilers and any type of gas burning appliance including gas ignited oil burners. This unit is designed to operate on a time cycle of from 3 to 5 seconds to open or close an electric circuit. The performance is designed to be uniform regardless of the length of time the burner may be in operation. The construction of the shield is made to be practically fool-proof and to protect the pilot flame from drafts and burner concussions. A pilot control is included as an optional feature of this equipment. It is designed to regulate the flow of gas to the pilot at a definite predetermined rate to insure a uniform pilot flame regardless of any fluctuation within the range of ordinary domestic pressures. This equipment is made by The Mercoid Corporation, located at 4201 Belmont Ave., Chicago, Ill.

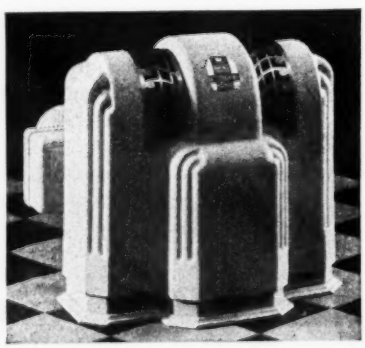


Oil Heating Unit

An announcement is made of a new boiler and oil burner assembly. The boiler is of the cast iron type and is provided with vertical fin-type flues. The combustion chamber is entirely surrounded by water for the purpose of minimizing radiation losses. A factory-molded refractory is built in. Provisions for supplying domestic hot water automatically throughout the year, also are included. Reif-Rexoil, Inc., located at 37 Carroll St., Buffalo, N. Y., is the manufacturer.

Appearance Is Feature of Oil Burner

To satisfy the desire for beauty in home appliances and to meet the demand for a small capacity unit, are the two outstanding ideas listed in favor of the oil burner shown in the accompanying illustration. This unit has just been placed on the market and is an addition to a line of oil burning equipment. It is described as having an improved air intake and air delivery. The mechanical parts are enclosed both with the idea of preventing tampering and making it safe for children. All of the mechanical parts are mounted on a heavy center casting for the purpose of bringing about permanent alignment, interchangeability of parts and absorption of mechanical noises. The ignition, the nozzle and the diffusor are coordinated at the factory and are made readily removable as a unit. The unit is described as producing a full floating flame. The Micro Corporation, located at Bettendorf, Iowa, is the manufacturer.



Solenoid for Refrigerant Control

This refrigerant control valve just recently has been placed on the market and is described as having a number of outstanding features which include a body made of a brass forging designed to eliminate all possible chance of leakage. Also, it has a monel metal valve stem which closes against a special alloy seat pressed into the body. This valve stem is opened and closed by the action of a movable plunger. As the surrounding coil is energized, the plunger is forced upward. The plunger is not attached directly to the valve stem but moves a short distance and gains momentum before it raises the valve stem itself. This is known as the impact type plunger which is designed to operate under high pressure. The valve stem closes with the flow of the liquid for the purpose of forming a tight seal. The

coil is designed to be completely sealed with a plastic material to keep out moisture. The power consumption is approximately 12 watts. Maximum pressure 200 lb. Pipe

connections 3/8-in. Size of orifice 5/32-in. Automatic Products Company, located at 121 No. Broadway, Milwaukee, Wisc., is the manufacturer.

Portable Air Cooler

A new portable air cooler has just been announced to take advantage of the demand for comfort during the coming hot weather. It is shown in the accompanying illustration and it is designed to supply a plentiful flow of cool and dry air. Rubber tired casters in the cooler's base permit it to be wheeled from room to room. It con-

tains a fan, cooling coil and a condenser for circulating the refrigerating fluid. This equipment cools, dehumidifies and circulates the air. It is rated as being capable of adequately cooling in the hottest summer weather an average size office, a living room, or a bed room. Its refrigerating capacity is listed as ½ ton, which is equivalent to the melting of ½ ton of ice over a period of 24 hours. It is designed to circulate sufficient air to supply

AUTOMATIC HEAT

NOW WITHIN THE REACH OF MILLIONS

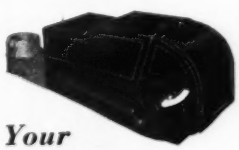
Even with sales of the stoker industry nearly 60 per cent ahead of its biggest year, 1933—the market for Automatic Heat has not been scratched. Along with the growing tide of Air Conditioning, the stoker is not only one of today's livest lines, but one of tomorrow's most promising opportunities—your next great market.

Aggressive plumbing and heating contractors are beginning to realize the great opportunity for increased volume and profits which the perfection of the Whiting Stoker has made possible. With a factory as experienced and responsible as the Whiting Corporation—a product as economical as the new Whiting Underfeed Stoker—and the unique Whiting plan of intensive local sales promotion—they can now gain a strong foothold in a market which promises to soon assume giant proportions.

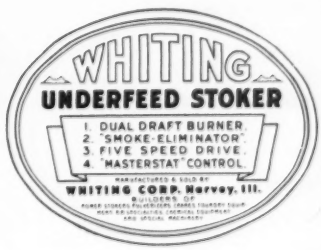
Investigate this rapidly growing industry now. Investigate the standing of the Whiting Corporation—and the economy and excellence of its new underfeed stoker. And write us today for the facts which no forward-looking dealer can afford to ignore. Address *Underfeed Stoker Division*, WHITING CORP., 15683 Lathrop Ave., Harvey (A Chicago Suburb), Illinois.

21 SELLING FEATURES!

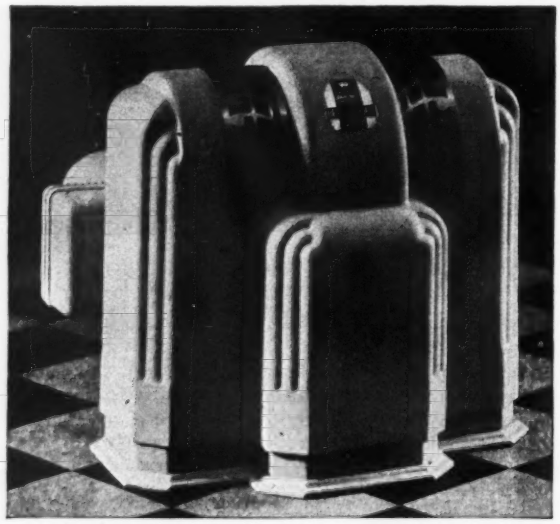
(1) *Whiting 4-Point Supremacy—"The Dual Draft Burner."* Burns less Coal—and Less Expensive Coal—And Gets More Out of It!
(2) *Whiting 4-Point Supremacy*—The *"Smoke Eliminator."*
(3) *Whiting 4-Point Supremacy*—The *"Five Speed Drive."*
(4) *Whiting 4-Point Supremacy*—The *"Masterstat"* Control.
(5) *A Healthier Heat* — even, steady control of temperatures.
(6) *A Cleaner Heat.*
(7) *Automatic Firing.*
(8) *Thermostat Control.*
(9) *Burns Lower Priced Coal.*
(10) *Burns all the Coal*—Smoke and Gas included.
(11) *No Ashes*—only clean clinkers, easily removed.
(12) *Safe!* No back-firing, back-smoking.
(13) *Easily Installed.* Joint sealing an outside job.
(14) *Easily Removed.*—not fastened to floor.
(15) *Low Current Consumption.*
(16) *Low Hopper*—25 inches from floor.
(17) *Smart and Modern in Appearance.*
(18) *Product of a Responsible Maker.*
(19) *Emergency Service.* Furnace may be used should current be shut off.
(20) *Perfected in Cost as Well as Service.*
(21) *No Soot—No Grime.*



Your next great Market



Power *Your* Sales *with* Beauty



STYLED QUALITY backed by DISTINGUISHED ENGINEERING

TO say that our rapidly expanding group of Bettendorf dealers are wild about this magnificent new Model F Bettendorf Automatic Oil Burner is putting it mildly. First, we gave them a new high standard of engineering that insures years of trouble-free service, unequalled quietness and unsurpassed fuel economy. Now we've added a 2½ gallon job that will perfectly suit 85% of the residential demand and have cloaked it in beauty beyond anything the oil burner industry has seen—a classic beauty that will always be in strictest good taste. Back of it all we give our dealers a powerful Help-the-Dealer-Sell Plan that commands RESULTS in Sales and Profits.

Write or wire us today as the first step in dominating your local oil burner market. The MICRO CORPORATION, *A Subsidiary of the Bettendorf Co.*, BETTENDORF, IOWA.

WOMEN succumb instantly to its smart, simple styling.

MEN welcome the stamina, the smooth quietness and the exceptional economy of the BUOYANT flame Bettendorf.

CHILDREN are safe, for all mechanical parts are completely housed.

YOU will be amazed at the LOW PRICE although Bettendorf Quality is UNSURPASSED AT ANY PRICE.

MAIL COUPON TODAY!

Bettendorf AUTOMATIC OIL BURNER

The MICRO CORPORATION, Bettendorf, Iowa.

GENTLEMEN: PLEASE SEND ME PARTICULARS ABOUT YOUR 1934 DEALER FRANCHISE AND YOUR HELP-THE-DEALER-SELL PLAN. Dept. D-7.

Name.....

Address.....

City.....

State.....

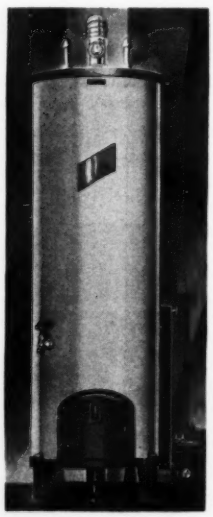
SEE OUR DISPLAY IN HOME PLANNING HALL

1934 A CENTURY OF PROGRESS CHICAGO

from 8 to 10 complete changes of air in a room every hour. It is available in finishes of grain walnut or mahogany, or in a modern blue green finish with an inlaid Micarta panel. The maker is the Westinghouse Electric and Manufacturing Company of East Pittsburgh, Pa.

Kerosene Burning Water Heater

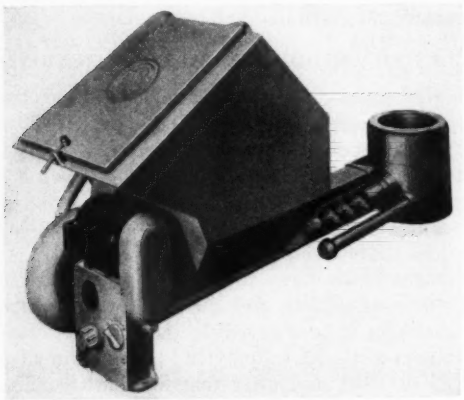
Here is a water heater which has been placed on the market and which may be used in any home or building with running water regardless of whether or not it has gas or electricity. It is designed to burn kerosene. A 50-gal. fuel drum may be set in any convenient place for refilling by the oil company. The burner is described as being heavy duty and as having a stone vaporizer. A fuel charger is included for the purpose of injecting a measured charge of kerosene for rapid starting. The thermostatic control may be set at the temperature desired. The storage tank is available in 22- and 32-gal. sizes for all home or light commercial uses. This tank is described as being heavily insulated and the heater is rated as producing 120 gal. of hot water through the use of one gal. of fuel. This equipment has been placed on the market by the Heater Division, Metal Door and Trim Company, of LaPorte, Indiana.



An Underfeed Screw Type Stoker

The unit shown in connection with this item just recently has been announced as a domestic stoker addition to a line of underfeed screw type units. The group of stokers, of which it forms a part is described as including 10 sizes, designed to cover the entire range of boiler capacities from home sizes up to 250 boiler h. p. The design of this domestic unit has been worked out to include some new features, especially in the mounting, transmission and coal burning end. The hopper is extra large, having a coal capacity of 500 lb. The height of the hopper is 26 in. above the floor level, a feature designed to facilitate filling. The transmission is made

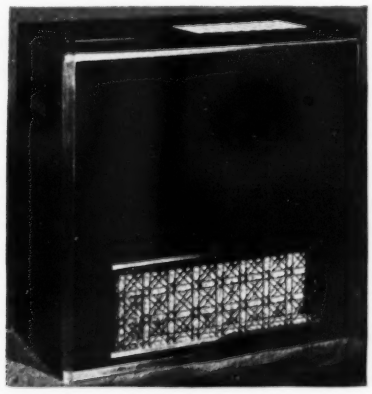
fully enclosed and is provided with what is listed as positive lubrication. It is arranged for 5 speeds. Gears are designed to be shifted without clashing while in opera-



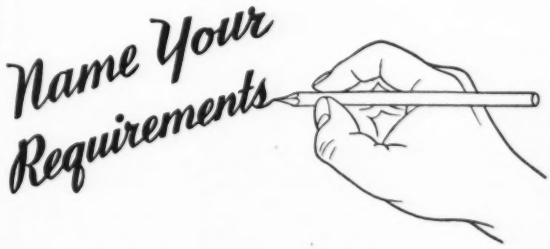
tion. Other features listed for this item are that it has an accessible cleanout door; a smoke arrester; a conveniently located retort cleanout; a fan silencer and an easily replaceable shear pin. The new unit is built complete at the Caldwell-Moore Plant of Link-Belt Company, 2410 W. 18th St., Chicago, Ill.

Floor Type Air Conditioner

The accompanying illustration shows a floor type air conditioner which has been placed on the market as one unit of a line of air conditioning equipment. It has been designed for summer cooling and dehumidifying and is listed as a small model with a large capacity. Modernistic in design, it has black rubbed enamel paneling which



is secured to a stainless steel frame. The frame forms a light metal trim. The unit cools, filters, recirculates and dehumidifies and is made especially adaptable to the requirements of offices and individual rooms in homes. The fan motors are of the capacitor type designed for quiet operation and for eliminating radio noises. Their speeds can be changed to accommodate the application. York Ice Machinery Corporation, of York, Pa. is the manufacturer.



WE'LL SUPPLY THE MOTOR!

The motor requirements of any Air Conditioning, Oil Burner, or Commercial or Domestic Refrigerating installation are more than successfully met by Century— Single Phase, Brush Lifting...Capacitor...Two or Three Phase ...Split Phase...Horizontal, Flange, Vertical or Built-in Mounting.

Century Engineers will go "all the way," from development to finished stages, to give you the benefit of their more than 30 years experience.

Fractional and up to 600 horse power.

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1806 Pine Street . . . St. Louis, Mo.
Offices and Stock Points in Principal Cities

Century MOTORS

Century 1/6 h. p. 1800 RPM Single Phase Motor

Century 1/6 h. p. Flange Mounting Split Phase Motor Sleeve Bearing

Designed from Bottom to Top To Be Used With Oil Burners.

YOU WILL WANT TO SEE THIS FLASH BOILER THAT IS STABILIZED!

20% of water boiling generates STEAM.

80% stabilizes the action of the quick steaming generators, holding heat the longest possible time.

A complete unit enclosing boiler and large tank connecting to copper coil for domestic hot water.

Oil Burner of any make fits into ample space.

Send for full information today.

WATERFILM BOILERS INC
154 OGDEN AVE. JERSEY CITY, N.J.

A. S. H. V. E.—

(Continued from Page 80)

the amendments to the constitution and by-laws suggested by the council and given by W. T. Jones:

SUGGESTED AMENDMENTS TO CONSTITUTION

Article C. 2, Section 7.—Committee proposes to change the ages of student members from 16 years to 20 and 25 years, as this meets requirements better.

Amendment to Article C. 3, Section 4.—When a student member finishes his study, he must, within one year, apply for junior membership. This amendment would limit student membership to 4 years.

Amendment to By-Laws to extend present admission fee to 1940 from 1935 to give the Society more time to determine the fee to be charged.

Amendment to By-Laws to extend present annual dues from 1935 to 1940, and after that fix dues at $25 for regular memberships, $15 for junior, and $5 for student membership.

Amendment to By-Laws.—Council to appoint a guide publication committee of five.

All these amendments were approved, and it was moved that they be sent to members to obtain a written ballot by mail.

THREE PAPERS ON RESEARCH WORK

The next paper, "Insulating Value of Bright Metallic Surfaces" by Professor F. B. Rowley, described the results of research conducted at the University of Minnesota in cooperation with A. S. H. V. E. Research Laboratory.

E. R. Queer, Paul Close, L. A. Harding and Mr. Bracken took part in the discussion of this paper.

"Heat Transfer from Direct and Extended Surfaces with Forced Air Circulation" was the title of a paper by C. A. McKeeman, and contained the result of research conducted at Case School of Applied Science in cooperation with the Research Laboratory of A. S. H. V. E. It was discussed by Professors F. B. Rowley and G. L. Tuve.

The last paper, "Factors Affecting the Heat Output of Convectors," was read by Professor M. K. Fahnestock and contained the result of research work conducted at the University of Illinois in cooperation with the Research Laboratory of A. S. H. V. E.

The convention passed resolutions of thanks to the following: Philadelphia Chapter, Program Committee and Speakers, Hotel Management and Staff, A. S. R. E. for joint session, trade and daily press, and ten past presidents in attendance.

FOUR GOLF TOURNAMENTS

Four golf tournaments were held in connection with the semi-annual meeting of the A. S. H. V. E., as follows:

On Wednesday morning an eighteen-hole medal play tournament for members and guests was held at Buck Hill Falls Course with the following prize winners: Low gross: First prize, W. E. Voisinet; second prize, W. J. Osborn; third prize, R. N. Trane. Low net: First prize,

Warren Webster, Jr.; second prize, H. B. Hedges; third prize, D. S. Boyden.

Thursday morning Buck Hill Falls Course was the scene of a tournament for ladies. Mrs. G. E. Otis and Mrs. H. F. Murphy were the prize winners.

The Research Cup Tournament for members and guests was held Thursday afternoon at Buck Hill Falls Course. Members only were eligible for cup competition. The prize winners were: J. F. McIntire, research cup. Low gross: First prize, J. F. McIntire; second prize, R. E. Moore; third prize, G. E. Otis. Low net: First prize, H. B. Hutzel; second prize, W. R. Eichberg; third prize, C. V. Haynes.

A Kickers' Handicap Tournament, 18 holes, was held at Sky Top Course on Friday afternoon. The winners and their net scores were: H. H. Erickson, 71; J. F. McIntire, 72; W. C. Randall, 72; L. C. Soule, 74; W. R. Eichberg, 76; H. J. Carr, 76.

THE BANQUET AND THE SKYTOP DINNER

The banquet, entertainment and dance was held at the Inn on Thursday evening. M. F. Blankin of the Philadelphia Chapter was toastmaster. Wm. P. Culbert, president of the Philadelphia Chapter and chairman of the golf tournament committee, awarded the golf prizes during the dinner, and John Howatt, first vice president of the Society and chairman of the Research committee, awarded the research cup to J. F. McIntire, while L. A. Harding presented the Past Presidents' Memory Book to William T. Jones.

The past presidents in attendance were introduced as follows: James D. Hoffman, J. I. Lyle, H. P. Gant, Homer Addams, Wm. H. Driscoll, Willis H. Carrier, F. B. Rowley and L. A. Harding.

HAYNES CONGRATULATES PHILADELPHIA

President Charles V. Haynes was also introduced and he stated that he was extremely happy to see so many in attendance; he thanked them all on behalf of the Philadelphia Chapter, the host at this meeting. He also complimented the members of the Philadelphia Chapter for their well-directed efforts which helped to make this meeting such a splendid success.

Professor A. C. Willard, president-elect of the University of Illinois, was next introduced and delivered a short address, which was warmly received. He stated that he hoped as the head of a university to advance the subject of engineering, particularly the subjects of heating and ventilating.

Toastmaster Blankin then introduced the various committee chairmen, all members of the Philadelphia Chapter, who were responsible for all the arrangements: R. C. Bolsinger, general chairman; W. R. Eichberg, entertainment committee; J. H. Hucker, transportation and publicity; W. F. Smith, financial committee; M. C. Gillette, ladies program committee; Wm. P. Culbert, golf tournament, and M. F. Blankin, chairman of the banquet committee.

Entertainment and dancing followed the banquet, and everybody had a most enjoyable time.

The beefsteak dinner at Skytop was served in the open on the mountain top, giving everybody a real treat as to scenery, mountain air and an excellent dinner.

Brown & Brothers Boilers

Now Manufactured in Higher Test

Brown & Brothers Seamless Drawn Copper Range Boilers are now available in the 350 pound as well as the 250 and 300 pound test class.

So you plumbing contractors in communities with high pressure water in the mains will now be able to meet your customers' demands for a range boiler made of that time-tested, non-rusting metal —copper.

Also, you can meet their demand for safety for there is no safer boiler made than the Brown & Brothers with its seamless drawn construction and its absence of any longitudinal seam.

In selling them this idea, tell them about Boiler No. 746 which was recently found in a house in Burlington, Vt. This unit was installed in 1884 and is still going strong. Tell them about Boiler No. 65 which was found in a house in Watertown, Mass. It was installed in the late 70's.

Give them all the facts about the Brown & Brothers Seamless Drawn Copper Range Boiler *and they will buy.*

E. B. BADGER & SONS CO.

75 PITTS STREET BOSTON

271 MADISON AVE. NEW YORK, N. Y.

I. C. S. ANNOUNCE AN AUTHORITATIVE COURSE THAT STARTS AT THE FIRST AND CARRIES THROUGH TO THE END

Prepared by experts and modern in every respect, this course is a vital contribution to every phase of the air-conditioning field. Nothing that approaches it in completeness is available anywhere else. A request will bring full information—free. Use the coupon.

INTERNATIONAL CORRESPONDENCE SCHOOLS

Dept. 7997, Scranton, Penna.

Please send me — free — full information on the subject checked below:

☐ AIR CONDITIONING

☐ Heating ☐ Ventilation ☐ Sheet Metal Worker

Name_____

Address_____

Controls—

(Continued from Page 72)

cords the time of burner operation. The inner part of this line shows us the time the burner was on and the outer part when the burner was in the "off" condition. You will notice that in most cases the thermostat calls for heat, starting the burner some five to ten minutes before the temperature line started to go up. In fact, in almost every case the temperature line continued downward after the burner started. This resulted in about a half of a degree of so-called under-travel, which simply means that because of the long off period ranging from about a half an hour to about an hour in duration, the equipment became pretty cool so that when the burner again came on it took some time to warm it up, and the distributing pipes, and start putting heat into the rooms.

It is also interesting to note that in practically every case, after the burner went off, the room temperature coasted up from one-half to one degree higher. This is what is known as over-travel or over-run, brought about by the fact that the burner was on for such a long period of time that after the room thermostat was satisfied the heat continued to be delivered into the room to increase its temperature for as much as fifteen minutes. There were seventeen operations of the burner during the day on which this chart was made.

OPERATION AFTER REMODELING

The chart marked Fig. 3 shows the temperature recorded in exactly the same location in the living room at a point about thirty inches above the floor, after one of the newly developed temperature control devices which may be described briefly as being of the anticipating type, had been installed. The temperature was practically at 71 deg. Fahr. throughout the twenty-four hours. There were about forty operations of the burner. We did some other things when we installed the thermostat. It was mounted on an inside wall in the hall about 18 in. above the floor and behind the hall table. This removed it from the influence of the fireplace and placed it low enough so that the owner would not notice nearly so much change between his ankles and his head during extremely cold weather. It was then adjusted until just the right number of burner operations was produced to prevent temperature changes in the living room which might be noticeable.

Perhaps the most interesting thing the owner had to tell us was that he no longer knew when the burner was on and when it was off as he had no feeling of temperature change under any conditions. However, he did feel that the house was a little too warm. We pointed out that he had become accustomed to a uniform temperature and that in all probability he could move the adjustment down a bit to a slightly lower temperature and still be entirely satisfied.

Later on we adjusted the thermostat for more burner operations and also for fewer operations. It was found that if fewer than about 40 operations occurred the temperature line started to wiggle, so we left the adjustment as originally made.

Penn Plans Dealer Meetings

A series of one-day meetings for automatic heat dealers is being planned by the Penn Electric Switch Co., Des Moines, Iowa. A. L. Ruble, Boston representative of the company, who has just returned east after a month at the factory, will hold the first meeting about the middle of July, for all Maine dealers. The meeting is scheduled for Portland, and more than 200 dealers have been asked.

At each meeting, the principles and application of the company's new temperature control will be presented by means of illustrated charts. A presentation of the extensive advertising and selling promotion to be launched by the Penn Electric Switch Co. will be made, the large replacement market of obsolete control systems will be pointed out and the market for new heating installations, at which the campaign is aimed, will be shown.

Fox Holds Air Conditioning School

On the three days from June 5 to 7, the Fox Furnace Co. of Elyria, Ohio, division of American Radiator & Standard Sanitary Corporation, conducted what is believed to be the first air conditioning engineering school for heating supply jobbers. Classes were held in the ball room of the St. Clair Hotel, Chicago, Ill. The registration totaled approximately 115 which included a small number of heating contractors.

At this school, there was introduced the new Sunbeam Engineering Manual which simplifies heat loss calculations for any type of building construction and for the rates of temperature difference from 10 degrees above zero to 30 degrees below zero. Those in attendance calculated the heating requirements; computed the necessary duct, riser and register sizes; and located the air conditioner, ducts, risers and registers. In other words every "student" designed an air conditioning installation for a residence from the building plans.

The school was formally opened and closed by C. A. Olsen, president of the Fox Furnace Co. who at the close told the gathering: "This school has been a great inspiration to me. You men are our disciples, you are going out into the field, and I am sure, after attending this course of instruction, you will be able to present this question of air conditioning better than you were before this meeting. And knowledge is the greatest necessity in the sale of any product or service."

The session on the construction, operation and control of air conditioning units, manufactured by the Fox Furnace Co. was held at its exhibit at the Century of Progress with Mr. Olsen in charge.

J. E. Maynard, chief heating engineer, presided over the instruction in air conditioning engineering.

To insure a well rounded course of instruction, the following talks and speakers were included in the program:

THE PHYSIOLOGICAL SIDE OF AIR CONDITIONING, by Dr. E. Vernon Hill, Chicago.

AIR CONDITIONING CONTROLS, by R. L. Campbell of Detroit Lubricator Co.

Automatically Fired Boilers
Should Be Equipped Now
WITH
EXCELSO
QUALITY WATER HEATERS
for
LOW COST
Summer and Winter
Domestic Hot Water Supply
EXCELSO PRODUCTS CORP.
57 Clyde Avenue Buffalo, N. Y.
or
Ask Your Jobber

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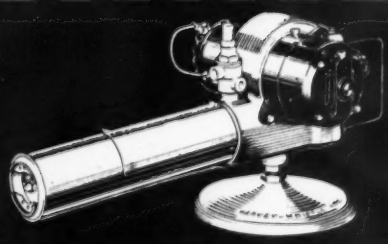

MODEL
for
Quick Profits
The sales sensation of the year! . . . the fifth burner in the Master Kraft line . . . selling to smallest homes and pocketbooks. Backed by powerful advertising. A real money-maker. Write for free Master Kraft profit plan.
HARVEY-WHIPPLE, Inc.
757 Emery St. Springfield, Mass.
Master Kraft
OIL BURNER

115 Heating Supply Dealers Attend Fox Furnace Air Conditioning School

AIR FILTERS AND FILTERING, by C. G. Lamb of American Radiator Co.

COOLING IN AIR CONDITIONING, by J. F. Floreth, York Ice Machinery Corp.

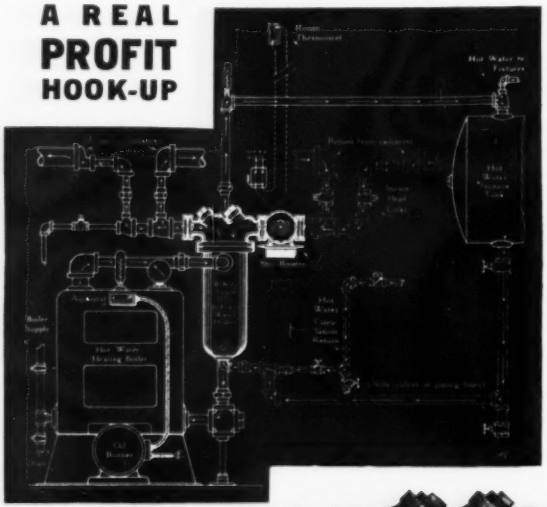
ELECTRIC MOTORS, by H. L. Madsen of Century Electric Co.

STOKERS AND STOKER FIRING, by E. C. Webb of Iron Fireman Mfg. Co.

OIL BURNING AND OIL BURNERS, by F. O. Cole of The Timken Silent Automatic Co.

BLOWERS AND MECHANICAL AIR CIRCULATION, by F. C. Warren of American Blower Corp.

A REAL PROFIT HOOK-UP



B&G TRIPLE DUTY HEATER

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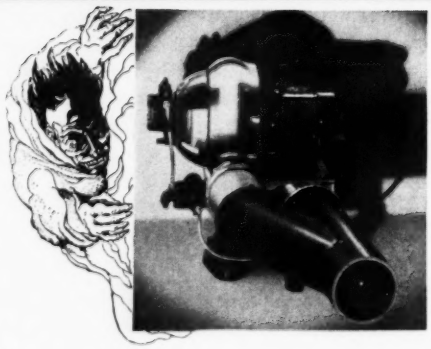

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WAYNE
The World's Finest Oil Burner

Record Attendance at National Warm Air Convention

At the mid-year convention of the National Warm Air Heating and Air Conditioning Association in the Hotel Stevens, Chicago, on June 12-14, the registration was the largest in the history of the Association which was organized in 1914. This is attributed to the intense interest of the industry in air conditioning of the home and improved methods of heating, cooling and air conditioning, as well as to the program devoted to the various NRA codes governing the industry. President H. T. Richardson presided.

During the various sessions, I. W. Rowell and J. F. Firestone, stressed the wisdom and necessity of the fullest cooperation on the part of manufacturers with heating contractors.

Bernard L. Johnson, editor of the *American Builder*, presented a splendid paper relative to "What's Ahead in Residential Building." He explained fully the government plans for financing new homes and modernizing old ones. He stated the extensive survey recently made did not indicate that some of the newest designs for homes as adapted to quantity building would replace to any particular extent the popular English, Early American and Colonial types.

W. H. Thorne, president of the Holland Furnace Co., a man of varied and wide business experience, but a comparatively newcomer in the industry, stated he did not believe the business of the industry was radically different from others. The same principles and policies which were necessary to the success of other lines were a requirement for the success of the warm air heating and air conditioning business.

Professor James D. Hoffman, chairman of the Installation Codes committee, reported two slight changes in the code for gravity heating and no changes in the present code for mechanical heating.

"Our Modern Equipment and Its Engineering," was the title of a paper by W. J. Hennessy, heating engineer of Cincinnati, Ohio. He explained the necessity for careful engineering of all modern heating and air conditioning equipment and gave many specific experiences.

The research session occupied all of Thursday Morning. F. G. Sedgwick, chairman of the Research Advisory Committee presided.

Dr. Arthur C. Willard, president-elect of the University of Illinois has directed the research work of the Association in furnace heating and furnace cooling, since its inception 15 years ago. This investigation is carried on by the Association in cooperation with the University of Illinois. The equipment for this activity includes a research residence which is the property of the Association and was erected in 1924, at Urbana, Ill. It houses probably the most complete equipment ever assembled for investigating residence air conditioning. During the course of his remarks, he stated that the task of the manufacturer would not be complete until his product furnished an equipment which would make the home comfortable and helpful 365 days in the year.

A plan was agreed upon to publish by Jan. 1, a volume giving full information relative to the developments obtained from the research work.

D. M. Dobbins of Marshall, Mich., pointed out the necessity and advantage of quality above price.

C. C. Whittier, consulting engineer and president of the Chicago Engineers Club, predicted comfortable

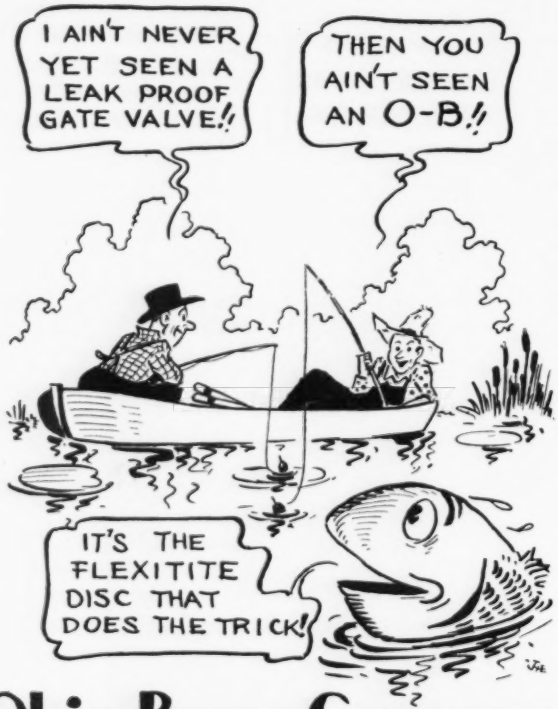
H. T. Richardson, President, National Warm Air Heating and Air Conditioning Association

healthful homes at cost, which would be within the reach of the wage earner. Heating and air conditioning offer a real opportunity for all concerned.

Addressing the title, "Public Information," A. F. Frazee urged the delegates to devote special attention to informing the public as to all that is new in heating and air conditioning and to do it systematically. He cited many instances where, when and how it could be done.

Air Conditioning Society Inspects A. C. System in New Jail

Making actual inspection of outstanding projects a feature of their monthly meetings, the Air Conditioning Society of San Francisco gathered at the newly completed jail for the City and County of San Francisco, June 14, where a buffet luncheon was served, followed by a tour of the $850,000 institution. Conceded to be the finest and most modern of its kind in the country, the new jail's equipment includes a complete air conditioning installation. Thos. Douglass of the Alta Electric & Mechanical Company, which installed this equipment, escorted the party through the premises. The Heating and Piping Contractors Association were present in a body, also a number of architects and engineers, bringing the total number of visitors to 85. The new structure was ready for occupancy July 1.



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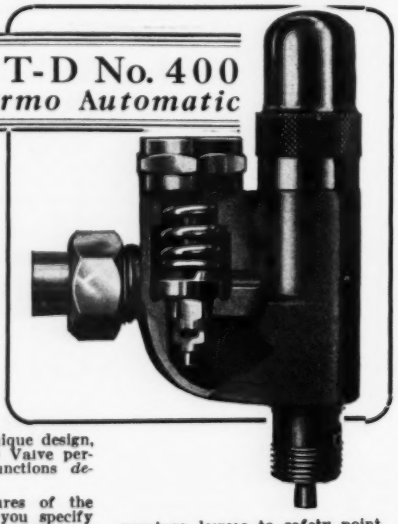
Hydro-Thermo Automatic



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BECAUSE of its unique design, the new No. 400 T-D Valve performs these four functions *dependably.*

Consider these features of the No. 400 T-D before you specify *any* safety valve: Operating parts may be renewed or repaired without disconnecting piping. The long extension which extends into water is filled with an expanding liquid. As water in boiler heats fluid in bellows and tube, the bellows expands and, with every per degree of heating, bellows expands against compression screw which is sealed at 200°, pushing seat downward and discharging extreme hot water. As cold water displaces discharged hot water and as temperature lowers to safety point, the valve closes. As a safeguard against carelessness a fuse is provided, which will melt above operating point of bellows. Because bellows is located outside of water area, rust and sediment cannot enter to hamper its action. Pressure valve with outside adjustments is also provided. A tripping lever is furnished if required.

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T-D SPECIALTY CORP.
300 RUTHERFORD AVENUE BOSTON, MASS.

Hospital—

(Continued from Page 76)

1,680 cu. ft. × 1 or 1,680 cu. ft. per hr.

In the living room of a residence, if the room is 12 ft. long, 10 ft. wide, and 9 ft. high, the cubic content is

12×10×9 or 1,080 cu. ft.

and, if the room has two walls exposed to the outside, the leakage would be between 1½ to 2 air changes per hr., or

1,080 × 1½ or 1,620 c.f.h.
to
1,080 × 2 or 2,160 c.f.h.

This inward leakage must be cooled when unit air conditioners are used and must be added to the air conditioner load not only for cooling this leakage air down to the temperature being maintained in the room but also to dehumidify it. For the time being let only the cooling down of this air to the room temperature be considered. It has been determined that 1 Btu. will cool or heat approximately 55 cu. ft. of air one degree Fahr.

Table Two
Co-efficients for Heat Transmission of Common Partitions

Construction	Thickness	Co-efficient
Brick, Plain	4″	0.50
Plastered 1 side	5″	0.48
Plastered 2 sides	6″	0.43
Hollow Tile, Plain	4″	0.45
Plastered 1 side	5″	0.42
Plastered 2 sides	6″	0.40
Gypsum Tile, Plain	4″	0.30
Plastered 1 side	5″	0.28
Plastered 2 sides	6″	0.27
Frame, Lath and Plaster, 1 side	5″	0.62
Lath and Plaster, 2 sides	6″	0.34

From A. S. H. V. E. 1934 Guide.

Therefore if the cubic feet per hour multiplied by the number of degrees which the air must be cooled is divided by 55 the number of Btu. per hour, which must be removed for cooling this air, is ascertained.

Thus in the case of the office, the Btu. removed to cool the incoming leakage air would be

1,680 × 10 F/55 or 305 Btu. per hr.,

which is 305/60 or 5.1 Btu. per min.,

or, in terms of refrigeration,

5.1/200 or 0.025 tons.

(This is assuming that the room is 10 degrees below the outside temperature.)

In the case of the living room in the residence the Btu. required to be abstracted from the incoming leakage air would amount to

1,620 × 10/55 or 294 Btu. per hr.
to
2,160 × 10/55 or 393 Btu. per hr.,

and this changed to refrigeration will be

294/12,000 or 0.024 tons
to
393/12,000 or 0.033 tons.

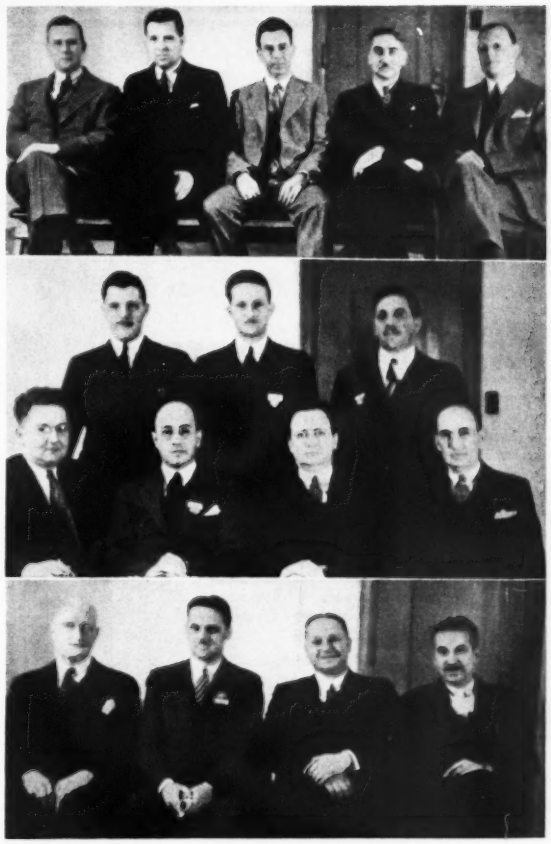
PROBLEM

In the hospital room shown in Fig. 1 it is desired to install a summer air conditioner; what would be a good solution?

SOLUTION

There are several factors which enter into hospital room installations which ordinarily do not intrude in the common conditioning problem. In the first place the private rooms are likely to be exceedingly small; that is when it is necessary to find a space sufficiently large and in which an air conditioner can be located. To a certain extent every inch of space is used for some purpose. Then there is the factor of the sick patient peculiarly sensitive to noise usually due to his, or her, condition and very easily irritated even by accustomed sounds. Also is the problem of where to locate the refrigeration machine.

These items will be considered one by one; let the matter of the unit location be discussed first; preferably it should be kept as far away from the patient's ear as possible which in this case would be somewhere near the entrance door to the room. Physically, it is impossible to locate this unit near the door and the only position, outside of one between the end of the bed and the closet, is along the wall opposite the bed and near the window. It will be necessary in this case to select a particularly quiet operating unit and to sound-insulate it very care-



Top row, left to right—E. R. Walsh, Jr., manager retail sales oil burner division; J. C. Hatch, Edwin J. Enoch, Jr., advertising manager, R. E. Nest, assistant research engineer and R. O. Graffius, branch manager, all of Gilbert & Barker Mfg. Co., Springfield, Mass. Middle row—(Seated) L. M. Persons, N. B. Delavan, M. E. Henning and Albert Penn. (Standing) R. V. Clark, R. H. Luscombe and A. L. Rubel, all of Penn Electric Switch Co., Des Moines, Iowa. Bottom row—J. L. Gammell, Carl Sahler, D. M. Eichmann and A. H. King, all of Thatcher Co., Newark, N. J. Photos taken at Philadelphia Oil Burner Exposition

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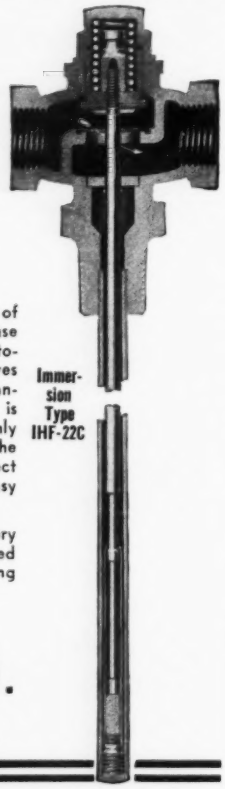
A LOVEKIN EMERGENCY GAS SHUT-OFF VALVE designed to prevent the possibility of explosions and resultant damages on all types of

Automatic Gas Water Heaters

Embodying the Patented Lovekin Principle of actuation upon the softening of a Fuse (similar to that used in the well-known Automatic Fire Sprinkler Systems), these Valves are designed for protection against dangerous overheating. The Fusible Element is enclosed in a cartridge, which not only "protects" the Fuse from contact with the water or other conditions which might affect its operation, but permits proper and easy re-servicing.

The general principle of operation is very simple; i. e., when the water is overheated to a danger point, the Fuse softens, causing the Gas Valve to snap shut.



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fully, not only for the patient in the same room, but also for the patient in the adjoining room.

A more ideal solution would be to put the unit in the basement and to run supply and recirculation air pipes to the room to be conditioned but as the room under consideration is on the second floor this would be a very

Table Three

Co-efficients for Heat Transmission of Ceilings, Floors, Etc.

Construction	Thickness	Co-efficient
Concrete, Bare	4"	0.65
	6"	0.59
	8"	0.53
	10"	0.49
Concrete, with Wood Floor	4"	0.40
	6"	0.37
	8"	0.35
	10"	0.33
Concrete, Bare with Hung Ceiling below	4"	0.37
	6"	0.35
	8"	0.33
	10"	0.32
Concrete, with Wood Floor and Hung Ceiling below	4"	0.28
	6"	0.26
	8"	0.25
	10"	0.24
Frame, Wood Floor only	..	0.46
Lath and Plaster only	..	0.62
Wood Floor and Lath and Plaster	..	0.28
Double Floor only	..	0.34
Double Floor, Lath and Plaster	..	0.24
Concrete on Ground, Plain	4"	1.07
	6"	0.90
	8"	0.79
	10"	0.70
Concrete on Ground, with Wood Floor	4"	0.52
	6"	0.48
	8"	0.45
	10"	0.41
Concrete on Ground with Dbl. Wood Floor	4"	0.38
	6"	0.36
	8"	0.34
	10"	0.32
Concrete with 3" Cinder Fill below and on Ground	4"	0.60
	8"	0.54
Concrete with 3" Cinder Fill below and on Ground with Wood Floor	4"	0.38
	8"	0.35
Concrete with 3" Cinder Fill below and on Ground with Double Wood Floor	4"	0.30
	8"	0.28

From A. S. H. V. E. 1934 Guide.

expensive solution involving carrying the insulated air ducts through the first floor room and destroying much of the available space in the lower room to say nothing of the cost of furring these ducts in, the running of the supply duct to the ceiling of the second floor room and furring it in there, the cost of the ducts, and the cost of the insulation. In fact this is such an expensive job for a single room that it will not even be considered here.

Suppose that it is decided to place the unit as indicated in Fig. 3 then what is to be done with the machine? The solution for this question would be to locate the machine in the basement carrying the refrigeration pipes up and down through the room below in the corner of the room where they could be covered with a metal moulding or furred in as desired without infringing seriously on the room space below. This is illustrated in Fig. 2.

On the other hand, if the hospital authorities would agree to have the patient lie with his, or her head always

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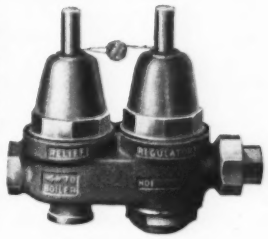

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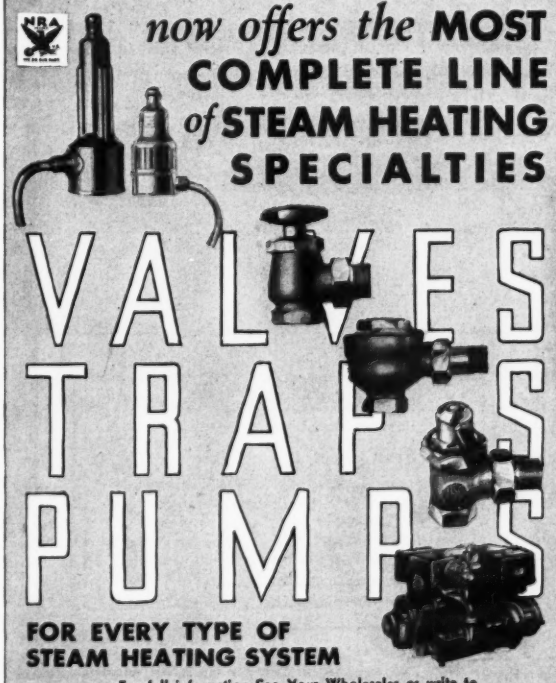

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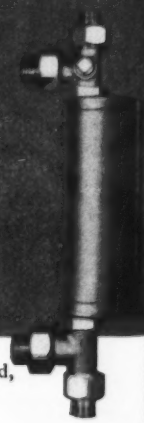

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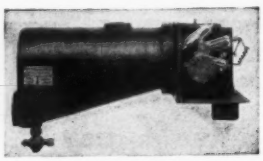
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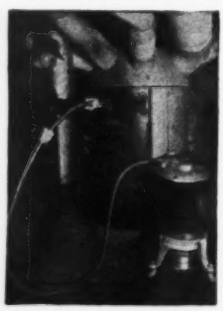
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toward the window the unit might be placed at the foot of the bed and the piping carried down in the clothes closet below which would be a still cheaper solution.

Table Three-A

Transmission for Common Building Materials

Air Spaces	1.10	(as laid)
Asbestos Shingles	6.00	(as laid)
Brick, Common	5.00	
Brick, Face	9.20	
Cinder Blocks, 8 in.	0.62	(as laid)
12 in.	0.51	(as laid)
Composition Roofing	6.50	(as laid)
Concrete	6.30	
Concrete Blocks, 8 in.	1.00	(as laid)
12 in.	0.80	(as laid)
Cinder Concrete	5.20	
Hollow Tile, 4 in.	1.00	(as laid)
6 in.	0.64	(as laid)
8 in.	0.60	(as laid)
10 in.	0.58	(as laid)
12 in.	0.40	(as laid)
16 in.	0.31	(as laid)
Lath and Plaster, ¾ in.	2.50	(as laid)
Plaster board, ⅜ in.	3.73	(as laid)
Mortar, Cement	12.00	
Slate Shingles	10.37	(as laid)
Stucco	8.00	
Wood	1.00	
Wood Shingles	1.28	(as laid)

Note—These are not co-efficients but only "transmissions" of material from which co-efficients may be calculated.

PROBLEM

Suppose that the hospital room was similar to that shown in Fig. 4 with no possible space for a unit what solution could be found for such a condition?

SOLUTION

There is no reason to give this problem up in despair just because conditions are tight in the room; this is only a case where it takes a better man to answer the question than it did where ample space existed. Now as far as the machine is concerned this will be located in the basement the same as suggested on the previous hospital room and the refrigeration piping will be carried up in the corner of the first floor room in exactly the same way as used before; this is all clear sailing.

Next, is to locate the unit; we know that units can be

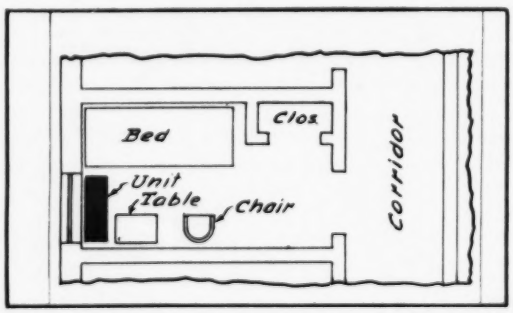


Fig. 5—How a year-round heating and air conditioning unit may be substituted for the radiator in order to conserve space

Table Three-B

Transmission for Common Insulated Materials

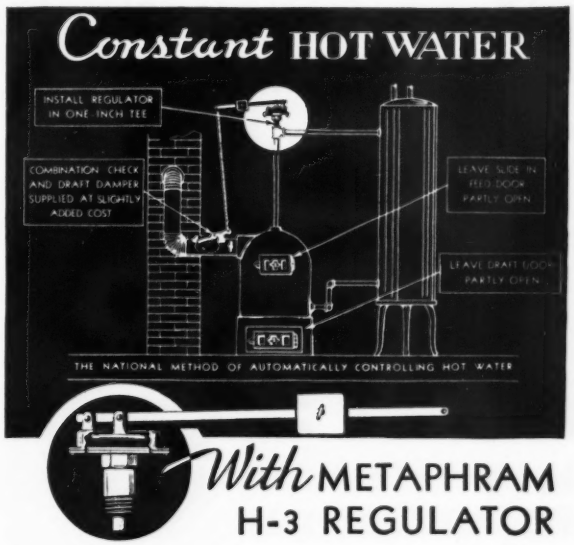
Aerocrete, 40 lb	1.06
50 lb	1.44
60 lb	1.80
70 lb	2.18
Asbestos	0.29
Asbestos Corrugated Board	0.48
Corkboard	0.30
Magnesia Board	0.51
Balsam Wool	0.25
Celotex	0.33
Flaxlinium	0.30
Insulite	0.34
Masonite	0.33
Sprayoflake	0.25
Rock Wool	0.30

Note—These are not co-efficients but only "transmissions" of material from which co-efficients may be calculated.

obtained for summer conditioning, winter conditioning and year-round conditioning so why not remove the radiator and substitute a year-round air conditioning unit in its place? If this is done care must be taken to see that the heating surface in the unit is proportioned so as to suit the hospital heating medium; that is for hot water if the radiator is a hot water radiator and for steam if the radiator is for steam. Also the unit heating capacity for the heating element should approximate that of the radiator as nearly as possible in Btu. or equivalent direct radiation (EDR). After this is done the room will appear as shown in Fig. 5.

The next problem to be considered will be that of a small shop or store.

Top row, left to right, E. M. Ford, sales manager and B. T. Wiechers, sales engineer, both of Webster Electric Co., Racine, Wis.; Denis McCormack, Julien P. Friez Co., Baltimore. Middle row—S. B. Bartlett, manager of branches, H. W. Dexter, sales manager and R. P. Babcock, north eastern territorial manager, all of Petroleum Heat & Power Co., Stamford, Conn., and P. J. Theobalt and Henry Huss, both of Balloffet Wire Dies Co., New York City. Bottom row—H. S. Winkfield, Holtzer-Cabot Electric Co., Boston, Mass.; Frank H. Dewey, manager air conditioning division; C. J. McCaffrey, sales manager, air conditioning division; V. C. Page, district manager, Philadelphia, all of Gar Wood Industries, Inc., air conditioning division. Photos taken at Philadelphia Oil Burner Exposition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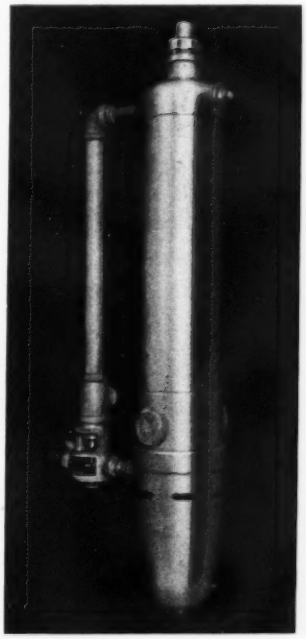
With METAPHRAM H-3 REGULATOR

Expressly Designed for Tank Heaters

Note this installation diagram. It is the short cut to satisfactory regulation of domestic hot water supply with *any* type of hand-fired tank heater. All connections are free from interference, and there can be no backing up of coal gas into the house or introduction of flattening air into the combustion chamber. The H-3 regulator is so low in price that any home owner can afford it. Yet it offers the sensitive and gradual control that you have always associated with Metaphram Regulators.

NATIONAL REGULATOR CO., 2317 KNOX AVE., CHICAGO

DO YOU KNOW



The MOORE Low-Input Gas Water Heater is FULLY AUTOMATIC Economical Dependable Easily Installed

•

These facts when told to your customers mean more sales. Write today for all the details.

•

J. W. MOORE VALVE CORPORATION
Everett, Mass.

AIR CONDITIONING
CONTROLS
for
Domestic or
Commercial
Installations

Humidity Control. Very accurate, with exceptionally small differential. Range 20 to 80 per cent relative humidity . . .

MINNEAPOLIS-HONEYWELL Air Conditioning Controls govern all phases of this work, including heating, cooling, ventilating, humidifying or dehumidifying. There are controls for every application, each designed to accomplish its particular function with characteristic Minneapolis-Honeywell accuracy and efficiency. Minneapolis-Honeywell Regulator Company, 2801 Fourth Avenue South, Minneapolis, Minn. Branch and distributing offices in all principal cities.

MINNEAPOLIS-HONEYWELL
Control Systems

The PRESIDENT
Atlantic City's
Newest Boardwalk Hotel
☆
Sea Water Swimming Pool
Marine Sun Deck
☆
American and European Plan
☆
Also Beautifully Furnished Housekeeping
Apartments—Pleasing Rentals
☆
One Step from Our Lobby to the World's Greatest Promenade—Ten Miles of Boardwalk—Bracing Sea Air—500 Rooms with Salt Water Baths—Complete Hotel Service and Home Privacy—Modest Rentals.

Sales Helps

Bulletin Announces New Boiler Water Level Control

McDonnell & Miller of Chicago have just issued a bulletin announcing a new boiler water level control. The new device is illustrated and described in detail. Among the features stressed are a compound-leverage mechanism which doubles the effective closing power of the float, and a cam and roller action which gives a perfectly straight thrust to the valve.

New Bulletins on Refrigeration Compressors and Centrifugal Pumps

Worthington Pump & Machinery Corporation of Harrison, N. J., has isued two bulletins recently, one featuring its horizontal duplex refrigeration compressors, and the other its centrifugal pumps. In describing the construction and operation of the centrifugal pump, the bulletin states that "the casing is cast iron, designed to produce smooth flow with gradual changes in velocity. An interstage passage carefully formed to eliminate losses is cast integral with the lower half of the casing. The casing is split on the horzontal centerline with the suction and discharge nozzles in the lower half. Access to the interior of the pump for inspection is obtained by removing the upper half of the casing. This may be done without disturbing the pipe connection or pump alignment. The joint between the casing halves is sealed by a specially prepared gasket."

Catalog of Air Compressors

The Brunner Manufacturing Company of Utica, N. Y., has just issued its catalog No. 28 of air compressors, including 47 new units. This catalog contains a comprehensive review of air compressor data which will no doubt be of value to any one interested in compressed air equipment. The catalog consists of 24 pages, 8½x10½ in. in size, and it is copiously illustrated.

Catalog of Compressors for Refrigerating Service

Carbondale Machine Company of Carbondale, Pa., has just published a bulletin, No. 1233, featuring its duplex vertical ammonia compressors, made in a wide range of sizes to cover commercial refrigeration and ice-making requirements. This bulletin illustrates and describes all details: Safety head, trunk pipe pistons, the shaft, the wrist pin, etc. It explains that the compressor is reversible by making two slight adjustments. A table of sizes is included. Installation and manufacturing photographs are shown on the last pages.

Announces New Automatic Humidifier

The Bon-Air Radiator Corporation of Boston has issued a bulletin announcing its new automatic humidifier. This device is illustrated and described in detail. It is designed to guide the air on its upward travel through the radiator in such a manner as to effect a rapid rate of evaporation and to introduce the air into the room away from the walls and curtains.

Acquires Silica Gel for Comfort Work

The Bryant Heater Co., Cleveland, Ohio, manufacturer of gas house heating and air conditioning equipment, announces that "it has acquired exclusive rights to silica gel and all silica gel equipment patents for comfort air conditioning."

This system permits the dehumidification of air through the "dehydrating" quality of silica gel. Over a period of ten years, this equipment has been operated in a wide range of industries where it was necessary to reduce the moisture content of the air—either where the air was used for process purposes, or where certain operations were performed under a controlled atmosphere condition. A number of silica gel installations of air conditioning systems in office and public buildings, restaurants, homes, etc., where the primary purpose was to insure the comfort and health of the occupants, are also in operation.

Will Sell Convectors in Eastern Massachusetts

Rome Radiation Company Division of Revere Copper and Brass, Incorporated, of Rome, N. Y., has just announced the appointment of Nordbeck-Hoyt & Jackson, Incorporated, 1352 Beacon Street, Brookline, Mass., as its sales representatives in the eastern part of Massachusetts, handling the company's convectors.

McCormick Names Sales Manager

J. H. McCormick & Co., Williamsport, Pa., manufacturers of air conditioning and house heating equipment, has appointed S. M. Washabaugh as general sales manager. He had been connected with the Spencer Heater Co. for the past ten years in the general sales department. G. T. Peifer, formerly connected with the Spencer company, has been made district representative at Buffalo, N. Y., for the McCormick company.

Joins Fluid Heat

Earl E. Adams, well known in the heating industry for the past twenty years, has joined the Fluid Heat Division, Anchor Post Fence Co., as manager of installation and service at the factory in Baltimore, Md. Included in his experience is a period of 15 years as chief engineer with the Gas Research Co., Dayton, O., where he was in charge of research and installation of gas manufacturing and oil burning equipment. His work covered activities in heating with all kinds of fuels.

Gas—

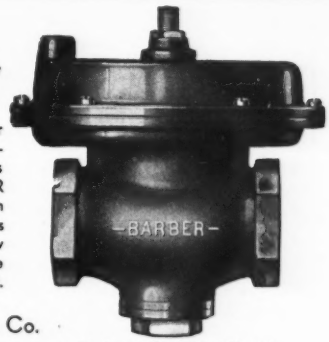
(Continued from Page 70)

final accuracy of such data or to deal with the technique of calculating such losses. There are, however, several points that we have not seen stated clearly in any of the literature on the subject and which it may be worth while to attempt to demonstrate here.

(To Be Continued)

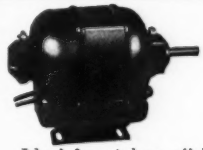
SAVE
on gas bills!

That's what everyone of your customers is trying to do—get gas bills down as low as possible. With a BARBER Gas Pressure Regulator on any gas appliance, gas bills will be much lower. Show one to your customers, take the orders and the profit. Write for details.



The Barber Gas Burner Co.
3702-4 Superior Avenue
CLEVELAND - - - - - OHIO

Made in ¼", ⅜", ½", ¾", 1", 1¼", 1½" and 2" sizes



Investigate This Motor

Ideal for stoker, oil burner, air conditioner, refrigerator and other applications demanding *quietness in operation*—isolation of noise and vibration. Ratings up to and including 3 H. P. Sample available for test.

A. C. Repulsion-Induction. Interchangeable frames.
D. C. and Polyphase. Specials where required.

THE LELAND ELECTRIC COMPANY
Dayton, Ohio

Canadian Address Toronto
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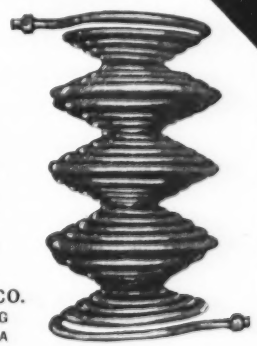
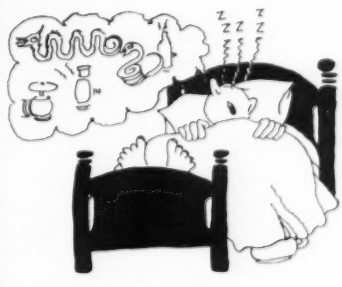
COPPER COILS

for all makes of Instantaneous Water Heaters
"Coils That Are Really Guaranteed"
Catalogue Price List Mailed on Application
Also Mfrs. Water Motors



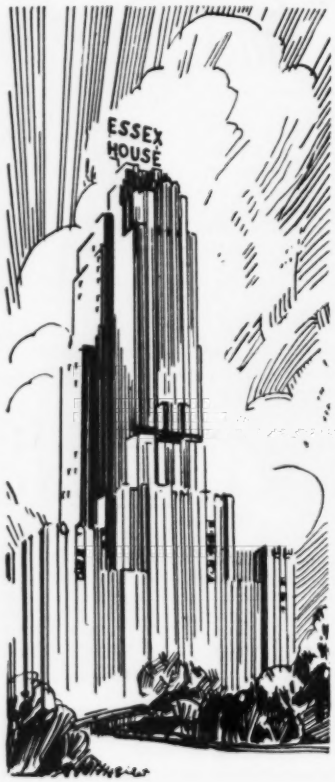
UNION COIL & MFG. CO.
207 INVESTMENT BUILDING
PITTSBURGH, PENNSYLVANIA



DO TRAPS AND VALVES GIVE YOU NIGHTMARES?

Put an end to worry about servicing heating jobs. For your protection, *each* Barnes & Jones thermostatic trap is tested under actual operating conditions before shipment. B & J traps and valves are built to go on the job and stay there. . . you don't have to spend your profits servicing them after installation. Write for latest bulletins.

BARNES & JONES *Inc., 196 Brookside Ave.*
BOSTON, MASS.



A PRODUCT OF YOUR GENIUS AND ENGINEERING SKILL STANDS READY TO SERVE YOU AT

ESSEX HOUSE
160 Central Park South
New York City

When those humid, sweltering days of summer come upon us, remember that the Teakwood Dining Room, Persian Coffee Shop and Cafe Essex are completely air-conditioned. Then, too, there are extra large rooms and suites. Essex House is a forty-story, ultra modern hotel, overlooking the 840 beautiful acres of Central Park.

Lessons on Mechanical Refrigeration Available

Announcement is made by the Heating, Piping and Air Conditioning Contractors National Association of the publication, under the auspices of its committee on air conditioning, of Part Four of "Air Conditioning for Heating Contractors." Part Four includes five units of material—Lessons XI to XV, inclusive—on mechanical refrigeration. This pamphlet contains information and data on the theory and practice of mechanical refrigeration; its application to the fields of comfort cooling, industrial air conditioning, ice making, and the preservation of foods; an analysis and description of equipment used; procedures to be followed in the calculations for mechanical refrigeration; and information concerning safety precautions. Copies of the material are available at 50 cents per copy. Requests should be sent to the headquarters office of the Association, at 1250 Sixth Avenue, New York, N. Y.

Will Exhibit School Equipment

The National Schoolview and Schoolmart will be held in New York, Aug. 15 to 24. This is intended to show the new equipment and supplies available for use in the school field. The exposition will be held concurrently with the 23rd annual convention of the National Association of Public School Officials.

Advance notices report that a few years ago expenditures for new public school building construction averaged more than $400,000,000 annually, a figure which has been drastically curtailed in the past few years. As a result of this curtailment, both new construction and upkeep will shortly require greatly enlarged appropriations.

J. I. Lyle, president, Carrier Corporation, and J. Brooks Nichols, vice-president, United States Radiator Corp., are members of the advisory committee for the exposition.

Research on Anthracite Continued at Mellon Institute

The Mellon Institute of Industrial Research at the University of Pittsburgh has announced that the multiple industrial fellowship on anthracite, established in that institution by the Philadelphia and Reading and Iron Company in 1932, has been continuing its broad program of research on problems relating to the anthracite industry, under the direction of Dr. H. J. Rose, senior fellow. So far this work has included studies of the chemical and physical properties of anthracite, new industrial uses and economic investigations.

J. C. Tweedwell, special factory representative of the export Division of the York Ice Machinery Corporation, York, Pa., sailed from New York on May 4 for a three months' tour of the European branches and distributors of the company. During his travels in Europe he will make his headquarters at the company's office in London. He will visit France, Spain and other countries in Europe.

KAINER

GOVERNORS

for **HOT WATER HEATING SYSTEMS**

PERFORMANCE—
is the thing that has ESTABLISHED KAINER GOVERNORS in the heating field.

JOBBERS, CONTRACTORS, and CONSUMERS recognize not only this "PERFORMANCE RECORD", but also the SATISFACTION resulting from KAINER GOVERNOR SALES—INSTALLATIONS and OWNERSHIP.

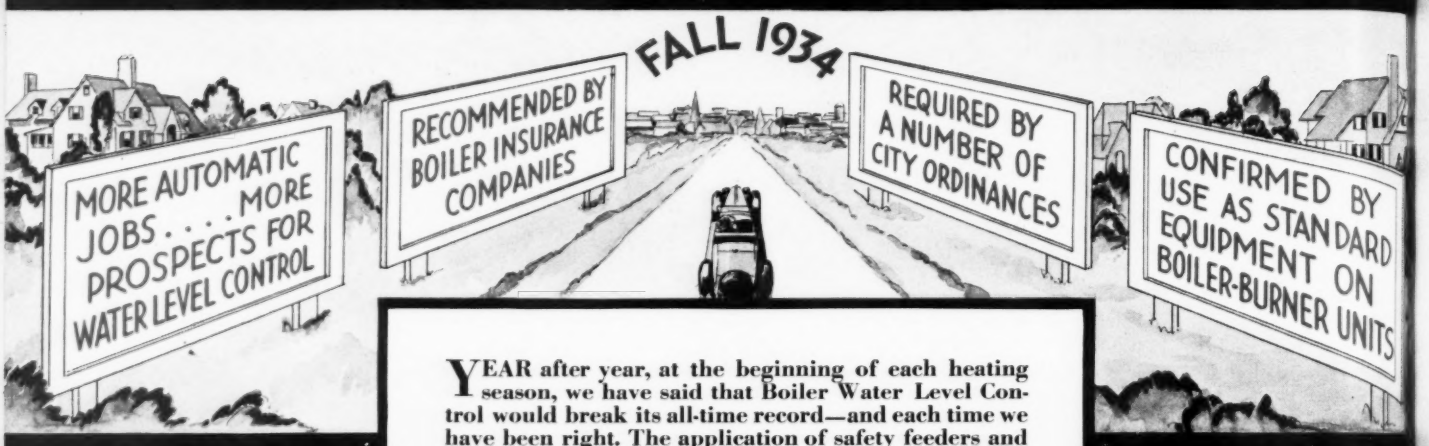
Write for Literature Today!

Handled by Recognized Jobbers!

KAINER & COMPANY

761 Mather St., Chicago

All Signs Point to
THE GREATEST SEASON EVER
for McDONNELL *Sales*


FALL 1934
MORE AUTOMATIC JOBS . . . . MORE PROSPECTS FOR WATER LEVEL CONTROL
RECOMMENDED BY BOILER INSURANCE COMPANIES
REQUIRED BY A NUMBER OF CITY ORDINANCES
CONFIRMED BY USE AS STANDARD EQUIPMENT ON BOILER-BURNER UNITS

YEAR after year, at the beginning of each heating season, we have said that Boiler Water Level Control would break its all-time record—and each time we have been right. The application of safety feeders and cut-offs has increased steadily—in good years and dull years—because it is sound and logical. All signs point to a still greater acceptance this year. It does not require a prophet to know that 1934 will be the greatest year yet for McDonnell sales!

What will this mean to you as an individual? The answer is that it may mean very little or a great deal—depending solely upon you. We say this because analysis of our past and present sales shows that a comparatively *small* number of contractors, oil burner dealers and stoker dealers are responsible for the *bulk* of these sales.

These men are not necessarily out "tearing their shirts" for business of this kind. They are simply alert to every chance to sell McDonnell Low Water Safety Controls. They *know* the equipment. They realize the importance of boiler water level control. They know how to present the McDonnell story. They realize that protection against low water is as logical as the safety valve on the boiler. They realize that automatic heat is a misnomer unless the water level is as automatic as the firing. Therefore they know that every automatic heat owner is a ready-made prospect for McDonnell Boiler Water Level Control.

If *you* know that—and realize the full importance of it—you are sure to have your share of the bumper crop of sales this season. Remember that once a man is sold the idea of automatic heat, he can't fail to consider the idea of making the water level automatic too. The tough part of the job is selling automatic heat. When this is done, the profit in the McDonnell equipment that goes with it is pure "gravy."

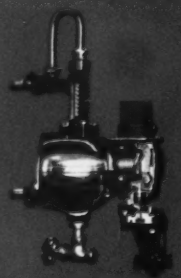
Write for May 15 *Condensed Catalog*

Right now is not a day too early to start after these extra profits. Ask for the new condensed catalog. Study the present McDonnell line. It is simpler than ever. The two feeder-cut-off combinations at the left cover practically all conditions. They offer both boiler protection and the complete convenience of automatic water feeding. Where price is the controlling factor in the sale, the all-purpose low-water cut-off, illustrated at the right, will protect the boiler at the lowest price ever asked for McDonnell dependability and quality.

McDONNELL & MILLER, 1306 Wrigley Building, Chicago, Ill.

McDONNELL
Boiler Water Level
CONTROL
"Doing One Thing Well"

Feeder Cut-off Combinations



No. 47-2. For boilers up to 5000 square feet; maximum steam pressure, 25 lbs. Has Quick Hookup Feature which cuts installation time from hours to minutes.

No. 51-2. For boilers above 5000 square feet; maximum steam pressure, 25 lbs. (For hand fired boilers, use No. 47 or No. 51 Safety Feeders.)

Low Water Cut-off

No. 60A

No. 60-A. Low water cut-off with quick hookup fittings for installation with 1 in. equalizing pipes.

Plus
No. 59

No. 59. Quick hookup fittings—for converting the No. 60A into a quick-hookup cut-off.

Equals
No. 60B

No. 60 B. This number is used to designate the low water cut-off complete with quick-hookup fittings, as illustrated.

SUPPLY NEWS

Month's Developments among Manufacturers, Wholesalers and Salesmen in All Sections

Hoffmann & Billings to Retire from Business

The Hoffmann & Billings Mfg. Co., Milwaukee, Wis., manufacturer since 1855 of plumbing fixtures, announced on June 20 that the Kohler Co., Kohler, Wis., had acquired the entire equipment for the manufacture of the Milwaukee company's line of showers, hospital fittings and shower stalls. As a result of this sale, the Hoffmann & Billings Mfg. Co. is discontinuing business. Its officers have been Edward F. Niedecken, president and treasurer; Charles Gezelschap Jr., vice president, and Edward T. Hoffmann, secretary.

Takes Over Regulator Company

Jas. P. Marsh Corporation, Chicago, manufacturer of heating equipment and industrial instruments, announce the acquisition of the business of the Berwyn Regulator Co., Berwyn, Ill., manufacturer of heat regulators. Production has been transferred to the Chicago plant, and sales will be handled through the regular Marsh organization.

Wholesaler Finds Business Better

E. O. Garrett, president and general manager of Plumbers & Factory Supplies, Inc., 41-45 West Vine Street, Columbus, Ohio, wholesalers, reports a continual increase in business. Albert Young was recently added to its sales force. This company is now employing twice the number of people it did a year ago.

Made Steel Distributor

Pidgeon-Thomas Iron Co., Iowa at South Main street, Memphis, Tenn., has been appointed a distributor of a stainless steel by the Republic Steel Corporation, Youngstown, Ohio, as announced by N. J. Clarke, vice president in charge of sales.

Nelson Opens Third Branch

The Nelson Co., plumbing and heating wholesaler of Detroit, Mich., opened a new branch at Ann Arbor, Mich., on June 23. This new venture is the third Nelson branch, the other two being at Royal Oak, Mich., and in the extreme eastern end of Detroit.

Members of the contracting trade in and around Ann Arbor as well as a number of representatives of manufacturers attended the "open house" at Ann Arbor. "These branches," as Harry O. Nelson, president and general manager, explained, "all carry a full line and in sufficient quantity to supply the requirements of the territory they serve, and with the main office and warehouse centrally located in Detroit, they are endeavoring to serve the master plumber and heating contractor efficiently."

Mr. Nelson is a former president of the Central Supply Association and has devoted a great deal of time and thought to the industry's problems. At Ann Arbor, Mr. Nelson pointed out that he "is thoroughly convinced that the wholesaler and contractor must go hand in hand if they hope to maintain the high standard of service which is essential from our industry.

"These two divisions," he explained, "represent the distributing factor in the industry and working closely together, quality in both workmanship and material can be maintained and without this close relationship neither is assured to the consuming public.

"I am a firm believer in the licensing feature as being the one important link in our chain of distribution that insures sanitary installations and the necessary safeguard to health.

"Wholesalers everywhere should unite with the master plumber in the establishment and maintenance of safe sanitary plumbing codes. We in this industry some times overlook the fact that the public knows very little about the science of sanitary plumbing and the wide difference in quality and efficiency of materials when properly installed and it, therefore, becomes our duty to the public to so regu-

At left: H. O. Nelson, president, and David Stewart, treasurer, both of Nelson Company—In center: Nelson Co.'s new branch at Ann Arbor, Mich.—At right: Allan F. Farquhar, secretary, and H. J. Eitel, sales manager, both of Nelson Company

At the opening of Nelson Co.'s new branch at Ann Arbor, Mich. About 300 people called during the day and evening. Insert at left: H. O. Nelson, president of Nelson Company. Insert at right: G. A. Raiser, president of Ann Arbor Association of Master Plumbers

late the functions of the industry that the public will automatically receive proper and efficient service.

"Handy man plumbing is dangerous and should be eliminated. Probably no better example of this could be cited than the Chicago incident last year which cost the lives of several persons while many hundred were made ill from the effects of impure water from the plumbing piping system due to improper installation.

"After this incident and others that have come to our attention from time to time we are more convinced than ever that there is only one way to distribute plumbing supplies that insures safe sanitary installations and which has an adequate measure of control through the licensing feature, namely: manufacturer to wholesaler, to licensed master plumber, to consumer."

G. A. Raiser as president of the Ann Arbor Association of Master Plumbers led the delegation of contractors visiting this new branch. David Stewart is treasurer of the Nelson Co., Allan F. Farquhar is secretary and H. J. Eitel is sales manager.

Heads Liquid Cooling Division

J. A. Harlan, Kelvinator Corporation commercial sales manager, Detroit, announces the appointment of S. V. Alltmont to head the company's newly created liquid cooling division. Persistently increasing demand for water cooling equipment and for beverage coolers among beer and soft drink bottlers and dispensers has made necessary the centralization in one division of all activities in connection with these products. Prior to his appointment Mr. Alltmont had been in charge of Kelvinator's water cooler division.

Employees of Jas. P. Marsh Corp. Play Golf

The Employees Golf Association of the Jas. P. Marsh Corporation of Chicago held its first tournament this year at the White Pines Country Club on Saturday, June 2. The first tee-off took place about 9 a. m., and each foursome played 18 holes, stopping between the 9th and 10th at the clubhouse for refreshments.

Lunch was served at the clubhouse about one o'clock following the first 18 holes, when the scores were made up and the prizes were distributed.

Those who desired to do so played another 9 or 18 holes after lunch, but this was not official.

Among those who attended the tournament were the following officers of the Corporation: President C. H. Olmsted, Vice President Barrett Scudder, Sales Manager of Staples Division and Advertising Manager A. D. Rose, and Thomas Kenney, sales manager of specialties division; O. W. Hage, assistant sales manager of staples division; J. A. Thommes, plant superintendent, and Hans Seegers, chief designer.

At the recent tournament of the Employees Golf Association of the Jas. P. Marsh Corporation of Chicago

Eastern Trade Golfers At Forest Hill Field Club

The Eastern Trade Golf Association held its second tournament of the season at Forest Hill Field Club, Bloomfield, N. J., June 14, with an exceptionally large attendance. At this tournament, J. B. Garfield celebrated his silver anniversary as captain of the association, and he has set an unusual record in not having missed a single meet in 25 years. In appreciation of his services as captain he was presented with a matched set of woods and irons in a bag, by his fellow members.

The prize winners of the day and their low net scores were as follows: W. T. Rogers, 70, received a special prize for low net 36 holes. First prize, S. C. Carrier, 72; second prize, Russell Bontecue, 72; third prize, F. A. Murray, 74; fourth prize, Arthur R. Glore, 74; fifth prize, T. W. Powers, 75; sixth prize, John Kjerner, 76; seventh prize, T. M. Kellogg, 76; eighth prize, Arthur Henrichson, 76.

The other players and their net scores were as follows: Walter L. Fleisher, 76; W. H. Driscoll, 77; H. Bartlett, 77; R. H. Smith, 77; Fred Heinze, 77; E. F. Keating, 77; H. Townsend, 78; D. W. Hughes, 78; W. C. Mumford, 78; I. S. Forde, 79; J. B. Garfield, 79; R. W. Myer, 80; W. H. Murphy, 80; G. E. Olsen, 80; C. D. Waters, 80; W. W. Hubbard, 81; E. A. Kerbey, 81; E. C. Shepard, 81; J. C. McDonald, 82; A. P. Keasby, 82; F. A. Fenton, 82; H. W. Reis, 82; Lee Klemmer, 82; E. F. Glore, 82; Ernest Williams, 84; H. M. Hall, 84; H. D. Jackes, 85; A. T. Miano, 86; B. T. Cummings, 86; H. A. Hubert, 88; M. A. Cordner, 89; C. M. Hunt, 89; G. F. Sheehan, 89; Geo. Allen, Jr., 90; B. S. Bacon, 90; R. G. Bookhout, 96; W. E. Heibel, 97; E. Bauman, 99; J. Everetts, 102.

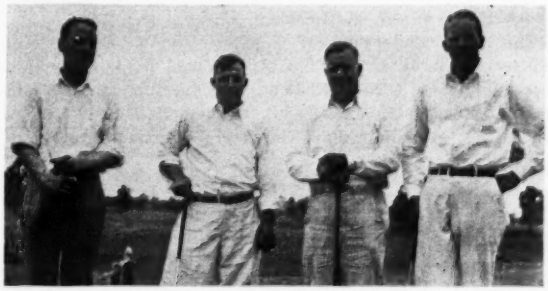
The following guests were present: P. Hermans, C. H. Armstrong, S. G. Cady, G. W. Saathoff, J. M. Williams, M. Hermans, H. Hagemeister, D. B. McDonald, A. T. Noone, W. A. H. Thorp, H. J. Rose, F. C. Stille, J. T. Foster, G. A. Murray, J. Schwerein, F. Loughlin. P. Hermans won the guest prize.

Michigan Trade Golfers Hold Two Tournaments

The Michigan Trade Golf Association held its second tournament of the season on Friday, June 22, at Brooklands Golf and Country Club near Detroit, Mich., with a good attendance. The weather was fine and the fairways were fast, but a brook, which seemed to be everywhere on the course, increased some of the scores. Just as the players were coming off the last green, it began to rain and everybody was ready for a pleasant evening in the clubhouse.

Thirty members and guests attended the dinner and business meeting, the most important business being the awarding of prizes. The next meet will be held at Oakland Hills, probably on July 18.

The prize winners and their net scores were as follows:



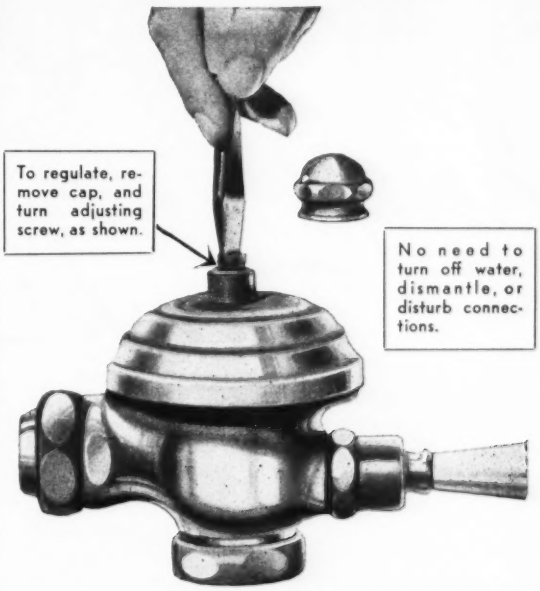
Michigan Trade Golfers at Brooklands Golf and Country Club, from left to right: J. E. McFate, E. D. Sheley, Henry Nannen and George Clifford

Perfect Control of Flush Duration

accurately maintained by the

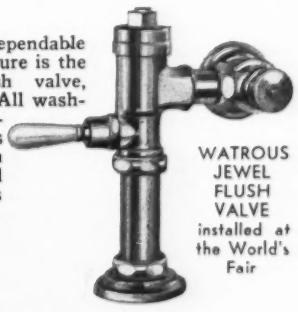
Watrous

MAJESTIC FLUSH VALVE



SEPARATE features of this exceptionally dependable flush valve combine in maintaining absolute precision in length of flush. Adjustment to the needs of the fixture is accomplished in a few seconds, as illustrated above. Also, the diaphragm is 25 per cent larger than in any other diaphragm-type valve, which makes sure of accurately timed action, even at low pressures.

Another example of dependable operation at low pressure is the Watrous Jewel flush valve, shown on the right. All washrooms in official buildings at the World's Fair are equipped with this popular model, and also with Watrous liquid soap fixtures.



WATROUS JEWEL FLUSH VALVE installed at the World's Fair

Write for Plumbing Catalog No. 433

Genuine Watrous replacement parts assure trouble-free operation

IMPERIAL BRASS MFG. CO.

1231 West Harrison St. CHICAGO

It's a KOVEN Product

Eggs and Tanks

It is just as hard to pick a good tank by looking at it as it is to tell a good egg from its outer appearance—the only way is to try them—but you can find out about an egg a whole lot quicker than you can about a tank.

The plumbing supply houses that sell the Koven tanks know that the reputation of this old established house backs the product he sells to the plumber—he knows that he is handling a quality product made of only the best material procurable by expert workmen.

RANGE BOILERS Galvanized or Copper	STORAGE TANKS Steel or Copper
SCULLERY SINKS	FUEL OIL TANKS
BARBER BOILERS	EXPANSION TANKS
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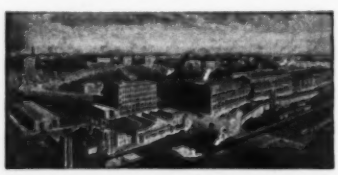

L.O. KOVEN & BRO. INC.
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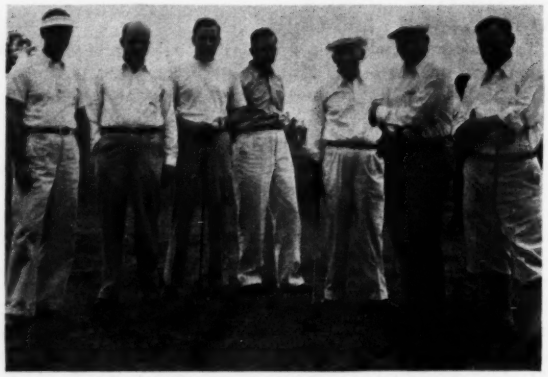

Michigan Trade Golfers at Brooklands Golf and Country Club, from left to right: D. J. McMillan, L. A. Lee, L. E. Walsh, J. B. Whiteford, R. J. Mullally, H. E. Rylander and Edward Glanz

First prize, R. K. Milward, 72; second prize, H. C. Nannen, 74; third prize, R. J. Mullally, 75; fourth prize, J. B. Whiteford, 75.

The winners of kickers' prizes were: H. E. Rylander, gross 110, net 78; C. W. Gurnau, gross 99, net 78; R. W. Light, gross 95; W. E. Danz, gross 86; H. O. Nelson, gross 104, net 77; L. A. Lee, gross 109, net 85; D. J. McMillan, gross 103, net 81; Ira Kanack, gross 102, net 81; F. Barton, gross 110; R. H. Deppmann, gross 108.

The other players and their scores were: E. J. Anderson, gross 82, net 75; Edward Glanz, gross 98, net 75; C. G. Finkle, gross 93; H. J. Eitel, gross 102, net 77; E. W. Lyon, gross 136; H. M. Booth, gross 94; E. D. Sheley, gross 98, net 82; L. E. Walsh, gross 101, net 83; F. D. Cooper, gross 114, net 88; H. Rogulie, gross 112; J. E. McFate, gross 107, net 85; G. E. Clifford, gross 100, net 88; J. E. Kelly, gross 111; F. X. Marzolf, gross 111, net 86; F. P. O'Neil, gross 105, net 77; G. J. Gamber, gross 112, net 80.

The Michigan Trade Golf Association held its first tournament of the season on Wednesday, May 23, at the Western Golf and Country Club, Detroit, Mich., with thirty members and guests teeing off. The weather was ideal for golf, and the outing was a most pleasant affair.

After the game thirty-five members and guests attended the dinner and the business meeting, at which officers for the coming year were elected as follows: President, J. B. Whiteford; vice president, Edward Glanz; secretary and treasurer, H. J. Eitel.

After a vote of appreciation to the outgoing officers and the host of the day, Jack Gamber, the meeting adjourned.

The prize winners and their net scores were as follows: First prize, E. J. Anderson, 77; second prize, L. E. Walsh, 79; third prize, C. W. Gudnau, 79; fourth prize, J. B. Whiteford, 79. The winners of the kickers' prizes were: J. E. McFate, 80; H. J. Eitel, 85; E. J. Sheeley, 81; F. Marzolf, 84; J. Kelly, 85; B. D. Goodrich, 89.

The other players were: G. E. McDonald, C. G. Finkle, Walter Gram, H. C. Nannen, J. F. Pyne, D. J. McLeod, H. Rylander, F. P. O'Neil, E. King, F. Cameron, H. O. Nelson, E. W. Titus, R. J. Mullally, E. Sanger, C. Mosack, J. Ivan Dise, D. J. McMillan, Jack Gamber, J. R. Lumm and V. H. Eggert.

Two Grandsons for Kohler

On May 14, a son was born to Mr. and Mrs. W. J. Kohler, Jr., and on May 31 a son, their fourth, was born to Mr. and Mrs. Carl J. Kohler. Both fathers are sons of W. J. Kohler, president of the Kohler Co., Kohler, Wisc., and both are active in that company.

Business Personals

Kenneth MacKenzie

KENNETH MACKENZIE has just been appointed manager of the Chicago branch of the American Radiator Co. with headquarters at 820 S. Michigan Avenue. This promotion takes Mr. MacKenzie from the managership of the Chicago branch of the Standard Sanitary Mfg. Co. which he has been holding. In his 27 years with the heating and plumbing field, Mr. MacKenzie has built up an unusually wide acquaintanceship in Chicago and adjoining territory, and made an excellent business record. He entered the industry with the American Radiator Co. in 1907 and, except for a brief period, has been associated either with the American Radiator Co. or with the Standard Sanitary Mfg. Co. since that time.

R. SEABURY, 1 Orchard Street, Wellesley Hills, Mass., has been appointed by the Jas. P. Marsh Corporation, Chicago, to sell its line of industrial instruments, gages, automatic air valves and similar staples to the jobbing trade in the entire state of Connecticut with the exception of the county of Fairfield, which will continue to be handled by the New York Office, 551 Fifth Ave.

ERWIN W. TUMLER has been appointed Wisconsin representative for the H. L. G. Co., Kalamazoo, Mich., manufacturer of water softeners. Mr. Tumler has had a long experience in this line.

THOMAS L. A. BRENNAN, formerly representing the Somerville Iron Works, is now factory representative of the Shur-Flo Corporation of Brooklyn, N. Y., covering the Metropolitan New York District.

L. S. Hamaker

L. S. HAMAKER, sales promotion manager of the Republic Steel Corp., Youngstown, Ohio, has been advanced to the position of vice president and general manager of the Berger Mfg. Co., Canton, Ohio, a wholly owned subsidiary of Republic. He began his career in the steel industry in the sales department of the Berger Mfg. Co. and later was made advertising manager. During a series of mergers he became advertising manager of United Alloy Steel Co., Central Alloy Steel Corp., and finally of Republic Steel Corp., when that organization was formed. He was appointed sales promotion manager of Republic in 1931.

R. S. ARCHER has joined the staff of Republic Steel Corporation as chief metallurgist of the Chicago district, according to a recent announcement by Earl C. Smith, chief metallurgist of Republic. Mr. Archer has been director of metallurgy of the A. O. Smith Corporation, Milwaukee, Wis., and prior to that was in charge of the Cleveland section of the aluminum research laboratories of the Aluminum Co. of America.

N. E. M. P. Golfers Elect Robt. F. McKeown President

The New England Metal Products Golf Association held its monthly meeting and tournament at the Nannamoisett Country Club at Providence, R. I., on Thursday, June 7, and elected Robert F. McKeown of the Palmer-Mullen Company, Malden, Mass., president. Mr. McKeown is the fifth presi-

At the recent convention of the Plumbing and Heating Wholesalers of New England, held at Oyster Harbor, Mass.—Top row, left to right: Al. Gustafson and J. Falk, both of Marks, Lissberger & Son, Long Island City, N. Y., and Thomas McDermott of T-D Specialty Corp., Boston—Second row: Fred Hall of Hall & Knight, Lewiston, Me.; Larry Lasher of Anderson Mfg. Co., Cambridge, Mass., and R. B. Allen of J. W. Moore Valve Co., Everett, Mass.—Third row: Harold Coombs of E. B. Badger & Sons Co., Boston; J. G. Ross, Republic Steel Co., Boston; Daniel McNeil, Wheeling Steel Corp., Boston; Louis Brightman, Grinnell Co., Providence, R. I., and John Riley of A. M. Byers Co., Boston.—Fourth row: J. V. McAuliffe, president of McAuliffe & Burke Co., Boston; J. H. Carr, Treasurer, Union Metal Works, Chelsea, Mass.; P. J. Goldrich, manufacturers' agent, Boston, and George W. Burke, treasurer, McAuliffe & Burke Co., Boston.—Bottom row: John F. Swinerton of Swinerton Co., Mrs. J. F. Swinerton, both of Wakefield, Mass., and J. G. Ross, Republic Steel Co., Boston, Mass.

We won't risk OUR REPUTATION—why should you risk YOURS?

"Good enough" methods are not good enough for CHESTER. Why should "good enough" pipe be good enough for you?

You deserve a reasonable profit on every job you do. You are entitled to pipe that enables you to make the most of your skill . . . that builds the good will which accompanies the use of quality materials.

Chester Pipe protects your customer's interests. Chester Pipe protects *your reputation* —and *your profits!*

Because of nearness to your market we can assure you of prompt and economical delivery of Chester Pipe. Write for full particulars.

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CHESTER STEEL PIPE

dent of the association which was organized in March, 1917.

George E. Phillips of the Phillips Lead & Supply Company was host at this meeting, and he was ably assisted by the other Providence members: Walter J. Eddy, Stephen J. Kindelan and George Tillinghast.

In the morning there were 18 holes of medal play, and 18 holes were also played in the afternoon. The prize winners were:

Morning: First prize, Robert F. McKeown, net 75; second prize, George Elliott, net 77; third prize, E. B. Lane, net 80.

Afternoon: First prize, A. T. Papineau, net 79; second prize, Fred Eggleston, net 80; third prize, Jack Ross, net 80. There was a tie between Mr. Eggleston and Mr. Ross.

At the business meeting, in addition to the election of officers, the following were admitted to active membership: Roger W. Pope, treasurer, F. W. Webb Mfg. Co., Boston; Warner B. Day, Boston manager, Chase Brass & Copper Co.; Shirley W. Mitchell, Boston Pipe & Fittings Co., Boston; James H. Mullen, Palmer-Mullen Co., Malden, Mass.; Edward Corcoran, Corcoran Supply Co., Brockton, Mass.

Treasurer John S. Nicholl presented his report as of May 1, 1934. Upon motion duly made and seconded, the report was accepted.

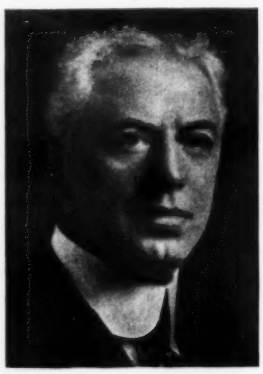
The Nannamoisett course was in perfect condition, and the tournament was a pleasant success.

In the absence of former President M. W. Dennison, E. B. Lane was appointed temporary chairman of the meeting.

The meeting was adjourned at 9 o'clock with a rising vote of thanks to George E. Phillips and the other Providence members for having made the event such a pleasant one.

John J. Hurley Called by Death

John J. Hurley, for many years one of the best known salesmen and authorities on flush valves and for the last eight years Michigan representative of the Imperial Brass Mfg. Co., Chicago, died on June 11 of pneumonia. The



John J. Hurley

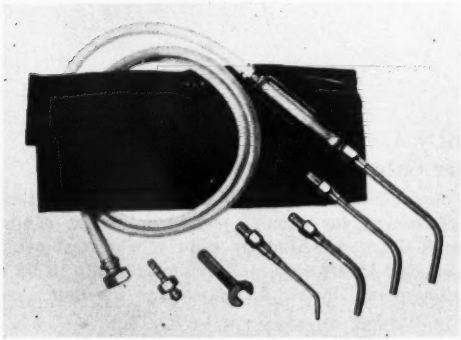
funeral was held June 14 from his Detroit home with services at St. Benedict's Roman Catholic church.

He was one of the first to introduce flush valves into Michigan. He first entered the plumbing industry with Murray W. Sales & Co., later being associated with the Ideal Manufacturing Co. and also the Mueller Brass Co. At one time he manufactured the early type of pipe cutting machines. Later he left the Otto Wurm Co. to introduce the flush valves of the Sloan Valve Co. into Michigan. Eight years ago he left that company and since has been the Michigan representative of the Imperial Brass Mfg. Co. He was 62 years old.

NEW STORE·SHOP *and* JOB ITEMS

A New Combination Outfit

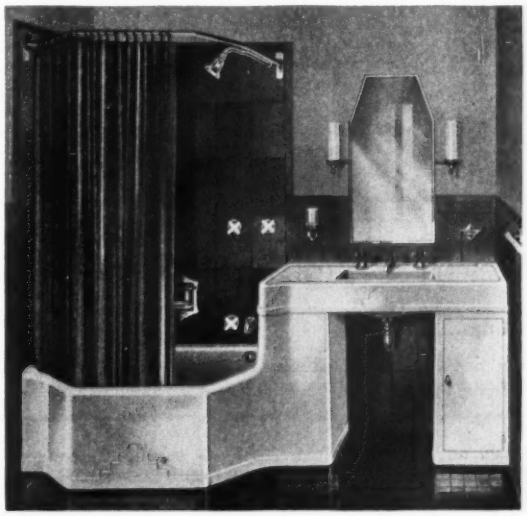
Announcement has just recently been made of additions to a line of equipment for soldering, brazing and heating. This outfit has been designed to be convenient for use in any position. The small but intense flame may be focused exactly where it is needed. The four torch stems are described as being precision finished and accurately machined. An individual mixer for each stem automatically maintains



exact proportions of acetylene and air for the purpose of insuring a correct flame. The handle which is common to all of the stems, is made of material designed to be non-heat-conducting for the purpose of eliminating cracking, warping, or loosening. It is finished in stain and lacquer. Two outfits for soldering copper piping installations are available. One of these consists of a torch with a needle valve, 15 ft. of hose and a 5-lb. pressure regulator. The second outfit consists of a torch and extra stem, 15 ft. of hose and a tank union. These outfits were designed specifically for installing new type copper pipe fittings easily and quickly. The Linde Air Products Company, located at 30 E. 42nd St., New York City, is the manufacturer.

Combination Lavatory and Shower

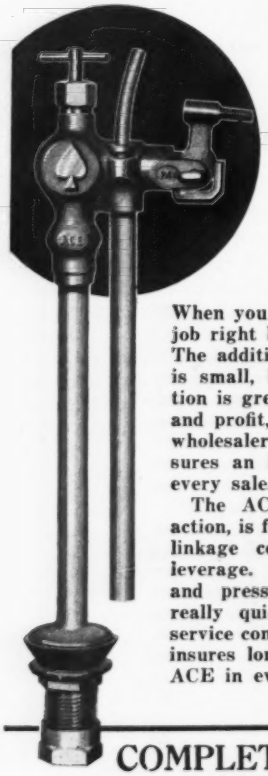
A new development in bathroom equipment is shown in the accompanying photograph which illustrates a combination bathtub, shower and lavatory. Within the length of 7 ft. it supplies a full length tub and a 40-in. lavatory. This is accomplished by recessing the tub under the lavatory top. The tub floor is practically flat and the large area is designed for the convenience of a shower stall. The lavatory edges are nearly 12 in. in size and the shower cabinet on the right hand side of the lavatory is designed for the storage of linens and other accessories. The whole unit is made so that with a toilet, it can be installed in a room as small as 5 ft. by 7 ft. in size. It is pointed out that this is of great importance in hotels, apartments, steam ships and other places where space is limited or costly. Likewise, it is featured as a solution to a frequent home owners' problem of how to get the space needed for an additional bathroom. This combination is made of cast iron and porcelain enamel and is available in white and standard colors for right or left hand recessed installation, or with lavatory end finished for corner installation. This combination has been placed on the market by the Lavashower Corporation, located at 112 So. 16th St., Philadelphia, Pa., and is made under contract by the United States Sanitary Manufacturing Company, of Pittsburgh, Pa.



New Water System with Worm Drive

A new worm drive deep well pump head and water system has just recently been introduced for small home water supply requirements where the well water is at a depth greater than 25 ft. The worm, which is made of hardened and ground steel is attached to the motor shaft and meshes with a phosphor bronze worm gear. The double row ball bearing for the worm end of the motor shaft is designed to absorb all of the end thrust. Ball bearings on the forged steel crank shaft and the worm shaft are made to minimize friction and to maintain a positive alignment. Connecting rods which are described as being extra heavy have renewable bronze bearings. The cylindrical crosshead is made extra large and contains two long bronze renewable bearings. All of the working parts are completely enclosed and operate in a bath of oil. The inside of the crank case is painted with a special gear case paint to seal all of the

PLAY THE ACE *for Profit and Results*



When you replace a ball cock, do the job right by installing a Nibco ACE. The additional cost to your customer is small, but the resulting satisfaction is great. That means good will, and profit, for you. Besides, Nibco's wholesaler-plumber sales policy assures an honest margin for you on every sale.

The ACE, with its roller-bearing action, is far ahead of the complicated linkage commonly used to provide leverage. Its combination shut-off and pressure adjustment makes it really quiet in operation under all service conditions. Its renewable seat insures long wear. In short, it's an ACE in every particular.

COMPLETE SERVICE IN COPPER FITTINGS

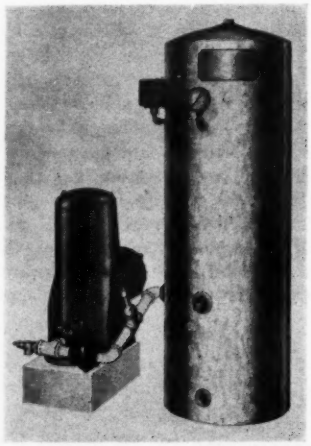
1 Flared Tube Fittings.
2 Cast Solder Fittings.
3 Waste and Vent Fittings.
4 All Reducing Fittings.
5 Pipe Threads to Copper Connections.
6 Globe, Gate and Drain Valves.

Nibco offers the trade a complete service in copper fittings, with every essential need anticipated. Flared-tube, cast solder and drainage fittings, together with all combinations with pipe threads, are included, as well as valves of globe and gate types. Uniformity can be obtained by ordering all your valves and fittings from one reliable source—Nibco.

"The WHY of Copper Plumbing" is a book you should not fail to read. It is a careful and thorough explanation and discussion of the matter, designed to answer your questions and give you material for constructive sales efforts. One copy will be sent free to any master plumber requesting it. Write for yours today.

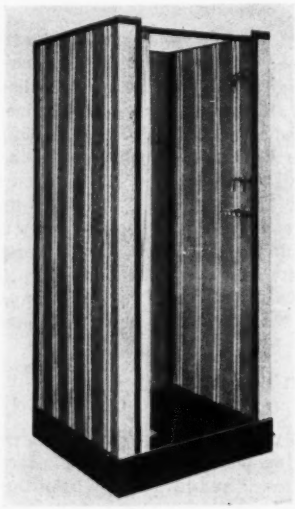
NORTHERN INDIANA BRASS CO.
ELKHART, IND.

pores. The shield is attached to the plunger rod above the differential cylinder to prevent water from entering the crank case should leakage occur from neglect. System capacties are 100, 180 and 275 gallons per hour and an automatic air control in the storage tank is included to keep the proper balance between air and water at all times. The Deming Company, of Salem, Ohio, is the manufacturer.



Recently Announced Shower Cabinet

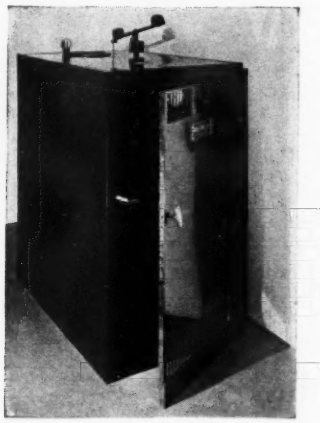
The demand for shower cabinet equipment for the basement of homes, for summer cottages, tourist camps and the like is the idea behind the shower cabinet shown in the accompanying illustration. It is shipped ready to be set up on a showroom floor or for immediate customer use. No



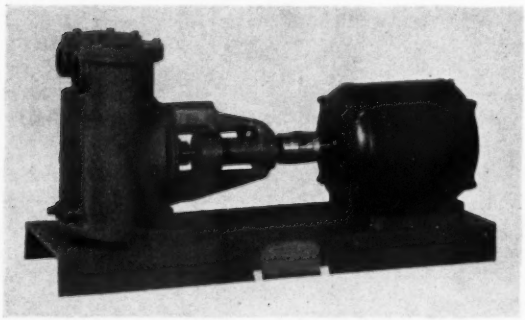
painting is required in its installation. The shower curtain is described as being completely pre-shrunk and the stall is listed as being leak-proof. The shower head and valve assembly and the waste outlet are described as being the best grade cast brass. The maker is Henry Weis Manufacturing Co., Inc., with general offices and factory at Elkhart, Ind.

Appearance Made Feature of Boiler

A desire to provide heating equipment having a finished appearance that will make the basement, without a separate boiler room, as livable as any other room in the house, is the main feature listed for the boiler ensemble shown in the accompanying illustration and just recently placed on the market. The boiler is enclosed entirely in an enameled steel, insulated cabinet. All of the doors and accessories are hidden. The new unit has been made to provide a solid fuel boiler for the average home, with the same appeal to the



eye that recently has been provided in oil burning and other automatic or semi-automatic boilers. The enameled steel cabinet is finished in red with chromium fittings. Space for an indirect water supply heater and for the smoke hood also is provided within the cabinet. Special grilles with a shutter arrangement in the front panel door of the cabinet are provided to emit heat to the basement as desired. American Radiator Co., located at 40 W. 40th St., New York City, has placed this equipment on the market.



Commercial and Industrial Pump

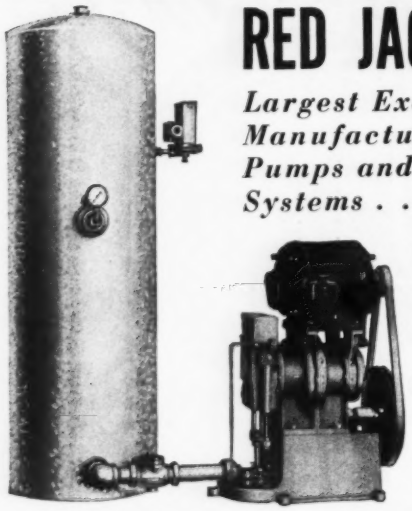
The centrifugal pump shown in the accompanying illustration is described as being self-priming. Its stainless steel shaft is mounted on heavy ball bearings giving positive lateral adjustment of the impeller for running clearance. A centrifugal separator is located on the discharge and a non-fouling valve to control the air circulation for priming is

FOR all-around dependability it's safe to choose valves and fittings that have been expertly designed, honestly manufactured and conscientiously tested. Every Jarecki valve is tested far beyond its working pressure rating to insure an *extra* margin of service. Every Jarecki fitting is carefully inspected so that only perfect ones reach the user....Before you buy, be sure to investigate Jarecki products—the kind so many companies standardize on for all-around satisfaction.

●

JARECKI MANUFACTURING CO.
ERIE, PA., U.S.A.

Easiest Selling Water Systems



RED JACKET

Largest Exclusive Manufacturers of Pumps and Water Systems . . . . . .

Model No. 250 Not including cylinder. Other units from this price up

$129

PUMPING UNITS AS LOW AS $41.25 FOR DAVENPORT

LOWEST PRICES

Dealers all over the country are pushing the easiest selling, low priced Red Jacket line of Shallow Well and Deep Well Water Systems. Dealers know a good article priced right means a quick turnover, and satisfied customers. It's the unusual combination of quality, proven service and low price that makes Red Jacket the leader today.

Known the World over.

Dealer Discounts Remain Liberal

Red Jacket offers low prices and gives the dealer the same liberal discount that has always been given. This liberal dealer discount will enable you to sell the Red Jacket complete line at the *largest profit.* Only Red Jacket offers so much to dealers.

Send for Catalog

New Catalog SW 87 shows Red Jacket's complete line of low priced shallow well and deep well water systems. Write for it today. It is *free.*

RED JACKET HAND and WINDMILL PUMPS . . .

For 58 years — the name "Red Jacket" on hand and windmill pumps has signified quality and satisfactory performance to the millions of farmers and other users. That's why dealers find Red Jacket to be the easiest selling line.

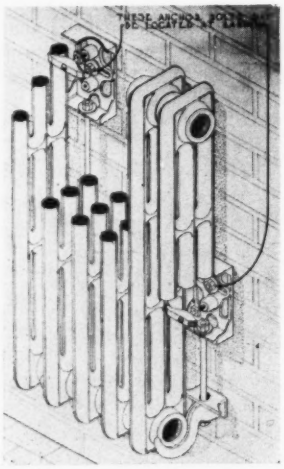
RED JACKET MANUFACTURING CO., Davenport, Iowa

Manufacturers of pumps and water systems for 58 years.

DORWARD-Red Jacket

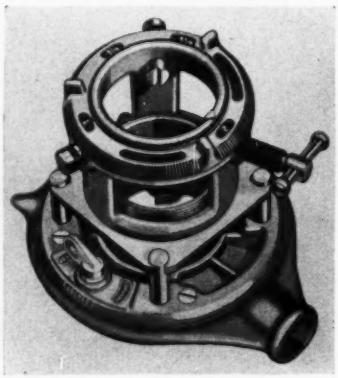
WATER SYSTEMS AND DEEP WELL POWER HEADS

installed in it. The base is an integral part of the casting containing the volute and the suction and discharge pockets, for the purpose of avoiding the possibility of pipe strains being transmitted to the working parts. Decatur Pump Company, of Decatur, Ill., is the manufacturer.



A New Radiator Hanger

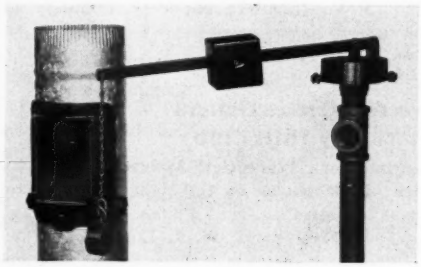
One of the prime factors listed as being responsible for the development of the radiator hanger shown in the accompanying illustration was the desire to eliminate the difficulty and care required in locating anchor bolts in walls during the construction of the wall. It is claimed that on a 38-in. radiator, the wall plates can be placed anywhere from 4 in. below the top of the radiator down to within 11½ in. of the bottom of the radiator. Marvel Manufacturing & Sales Co., of LaFayette, Ind., is the maker.



New Threader Is Announced

This new pipe threader, just recently placed on the market, is described as having a direct drive. In other words, the power comes direct from the handle to the head and to the chasers in a straight line, the pull being right over the chasers. The design has been worked out to eliminate pressure on the posts which are described as being full floating. The posts are made to only taper the thread. The chasers are held in place by enclosed ball and coil spring.

The ratchet thumb lever is made to snap into exact reverse, forward or locked position. An arrow shows the direction of pull. The work holder is set to size with the turn of a knurled gauge ring, that snaps into place at the size wanted. The pipe is tightened with one vise screw. Chasers are made interchangeable. They are designed to fit any make of poster die. The tool weighs 12 lb.; is rust-proof throughout; has one handle and has feet for standing it up. The Ridge Tool Co., Elyria, Ohio, is the manufacturer.



Water Heater Control

The automatic control of small hot water tank heaters is provided by the equipment shown in the accompanying illustration. The combination of the check damper with the automatic control is a new development in this regulator. This equipment is described as being adaptable to all types of coal fired tank heaters. Also, it can be connected directly to the feed door of top-feed type heaters, as in the case of earlier models of this equipment. However, the method illustrated is recommended for this equipment by the manufacturer. The check and choke damper is supplied already mounted on a section of 24-gauge galvanized stove pipe. The damper may be installed in either a vertical or a horizontal position. National Radiator Company of 2301 Knox Ave., Chicago, Ill., is the manufacturer.

Permutit Co. Increases Its Field Staff

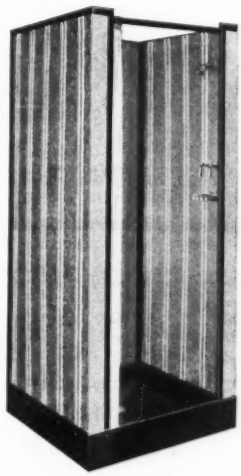
The Permutit Company of New York City has just appointed two new men to its domestic department field staff. D. L. Pollock will cover Michigan and northern Ohio, and J. J. Gallagher has been assigned to cover Massachusetts, Rhode Island and Vermont, according to Oliver P. Harris, manager of domestic sales. The company has recently added several new models to its line of water softeners.

New Jersey Trade Golfers Meet at Forest Hill

The Plumbing and Heating Trades Golf Association of New Jersey held its monthly tournament at the Forest Hill Country Club, June 21. The hosts for the day were A. Walsh, F. Engelberger and R. E. Ryan. The event was favored by perfect weather and the course was in excellent shape. In the morning nine-hole kickers' handicap first prize was won by F. Robinson. Second prize by D. Snyder. In the afternoon 18 holes were played and the prize winners were:

Class A: First prize was the subject of a tie between F. C. Stille and W. Rogers with net 75, with the result that Mr. Stille received first prize and W. Rogers second. There was also a tie for third prize between F. Robinson and D. Snyder with a net of 78. F. Robinson won. In Class B, first prize went to S. H. Blackwood with a net 79; second prize, H. Lee, net 84; third prize, C. Pierce, net 85.

The guest prizes were awarded to A. Walsh and R. E.



We're all interested in efforts to promote a building revival, but while we're waiting for that, here's a "bird in the hand" that's worth using. Weis COTTAGER Cabinets are being sold to tourist and other camps, to summer cottages, and for use in home basements. It's a low cost item, and therefore easy to sell. It's Weis quality at an especially attractive price. People *want* showers —here's one they can afford.

Here's a chance for real profit for you—*now*, without waiting for that boom to materialize. Ask us for details, quickly, while the season is still here.

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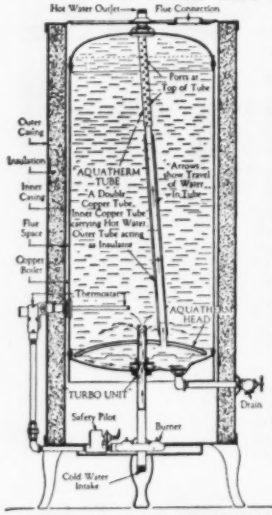
U. S. Patent No.'s 15065050-1648043-1762215



Prevents sediment from accumulating in the boiler—reduces fuel cost 50%—stops costly burnouts.

The only fundamental improvement made in hot water storage tanks during the past 40 years.

These new inventions by Theodore W. Dahlquist are supplied in all DAHLQUIST COPPER BOILERS and absolutely stop sediment from forming on the bottom of the boiler. No need to drain a Dahlquist boiler every few weeks. The TURBO prevents sediment from forming—keeps the hot water always crystal clear, fit for drinking—prevents costly burnouts. The AQUATHERM reduces fuel cost 50%. Whether your need is for a common range boiler, an automatic hot water storage system or a commercial heavy pressure storage boiler, learn more about these remarkable inventions before you order.

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TURBO AQUATHERM

(Under fired automatic hot water storage system)

ALL TYPES OF COPPER BOILERS

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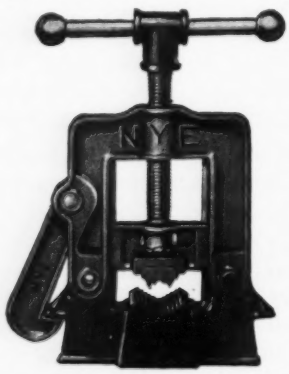
NYE TOOLS

Nye Vises With FULL GRIP Jaws



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Ryan. There was a tie for the cup between W. Rogers and F. C. Stille with a net 76. This gave Mr. Stille his second leg on the cup.

The net scores in the 18-hole game in the afternoon were: C. M. Pierce, 85; W. Rogers, 76; A. Gasewind, 81; F. L. Engelberger, 80; H. S. Officer, 92; F. C. Stille, 76; R. Foley, 101; F. L. Robinson, 78; M. Swanson, 121; C. Carlson, 109; D. Snyder, 78; J. Seifert, 88; S. H. Blackwood, 79; A. B. Cashman, 82; J. Wallwork, 94; H. Lee, 84.

The gross scores of the guests were: Jas. A. Byrne, 114; A. Walsh, 86; R. E. Ryan, 88; W. Dallangren, 121; F. A. McBride, 97; J. V. Hinchliffe, 95; T. V. Connelly, 96; J. M. Buday, no card.

Southwestern Trade Golfers Meet at Victory Hills Club

The Southwestern Trade Golf Association held its second tournament of the season on the links of the Victory Hills Golf Club at Kansas City, Mo. Prizes were won as follows:

In Class A: First prize, W. J. Liggett, net 63; second prize, W. Wiedeman, net 65; third prize, F. O. Piepenbring, net 68.

In Class B: First prize, George R. Jorgensen, net 61; second prize, B. M. Snook, net 65; third prize, Jos. Childers, net 69.

Birdies: F. T. Smith, George R. Jorgensen, F. O. Piepenbring, C. E. Harris, H. H. Wright, Dan Lacy, B. M. Snook and I. L. Roark.

Low putts: B. M. Snook. High score: William Talbott.

On Thursday, June 14, the Southwestern Trade Golf Association held its third monthly tournament at the Old Mission Golf Club, Kansas City, Mo. At this meet the prize winners were:

Class A: First prize, J. W. Liggett, net 70; second prize, B. Snook, net 72; third prize, I. L. Roark.

Class B: First prize, Walter Wiedeman, net 69; second prize, Dan Foley, net 75; third prize, George R. Jorgensen.

Birdies: B. Snook and Charles Harris.

Low Putts: B. Snook.—High Score: Herman Hodes.

Delaware Valley Trade Golfers Meet at Trenton

Members of the Delaware Valley Trade Golf Association held their first tournament of the season on Thursday, June 14, at the Trenton Country Club in Trenton, N. J., as the guests of Paul R. Berryman, Archie M. Maddock, Harold Maddock and Philip J. Faherty.

The attendance was good. About thirty-five took part in the game, and this number was greatly augmented at the dinner in the evening.

The prize winners and their net scores were as follows:

In the morning game, 9 holes: A. V. Gemmill, 35; Bobby Burns, 38; Russell D. Knight, 39.

In the afternoon game, 18 holes: John Radice, 73; James Harper, 74; Raymond Graff, 74; R. F. Kleinman, 79; James Dwyer, 79; Charles Hackett, 80; Robert G. Savill, 80; Paul R. Berryman, 80.

The prizes were donated by Raymond Graff, C. W. Wanger, Russell D. Knight, Archie M. Maddock, Harold Maddock, Paul R. Berryman, W. A. McPhail, Frank L. Wilson, Harold H. Held, H. J. Kleinman and J. D. Johnson, Jr.

The Association is planning to hold only one more tournament this season, and this is to be held some time in September at the Concord Country Club, near Wilmington, Del., on which occasion the members will be guests of the Speakman Co.

THE TRADE

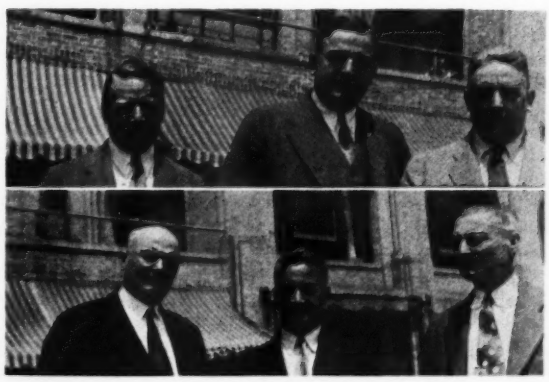
News of what plumbing and heating contractors are doing the country over

St. Louis Plumbers Hold Exhibit

St. Louis opened its new Municipal auditorium with a big show entitled "St. Louis on Parade." Many manufacturers in St. Louis had displays of their wares and the various activities of the city departments such as health, water, street, park and plumbing were shown. In conjunction with wholesalers and with various members of its organization, the Contracting Plumbers' Association, Inc. of St. Louis cooperated with the city plumbing department in putting on an exhibit of plumbing fixtures to show evolution from the old to the new. The exhibit showed Philadelphia hoppers, copper bath-tubs, decorated toilet outfits, etc., contrasted with the new vitreous china closet outfits, built-in tubs, pedestal lavatories in white and colors. The exhibit was successful as the committee in charge had a number of inquiries on the modern plumbing fixtures.

Rupert J. Weber Resigns as First Vice President of Illinois Association

Rupert J. Weber of Chicago has resigned as first vice president of the Illinois Master Plumbers' Association, owing to the fact that he has not been in good health for several years. His physician has ordered him to give up all possible activities to take a complete rest for some time to come. Mr. Weber has also resigned as member of both state and local association committees. This, however, will not in any way affect his association membership. President Henry P. Reger received Mr. Weber's resignation with regret and appointed Second Vice President J. A. Van Nattan of Springfield to fill the unexpired portion of Mr. Weber's term of office. The office of second vice president will remain unfilled for the time being.



At the recent convention of the Heating, Piping and Air Contractors National Association in Atlantic City.—Top row, left to right: R. C. Bolsinger, Norristown Magnesia and Asbestos Co., Norristown, Pa.; F. R. Dannies, National Radiator Corporation, New York City; M. C. Gillette, Hoffman Specialty Co., Philadelphia.—Bottom row: Wm. M. Anderson, Philadelphia; Thomas J. Magan and Geo. M. Getschow, both of Chicago

Plumber Now City Commissioner

Axel F. Peterson, plumbing contractor, has just been elected to the office of commissioner of St. Paul, Minn. He is one of six commissioners and will head the department of finance. He has been active in earlier years in association affairs in Minnesota, having served as president of the Minnesota State Association of Master Plumbers. He is a brother of the attorney general of Minnesota and both are active in the Farmer-Labor party.

Milwaukee Club Elects Officers

The Milwaukee (Wis.) Plumbing and Heating Club has just elected officers. George Stoehr is president; Frank Glas, vice president; N. H. Dengel, secretary; D. Stern, assistant secretary, and Hans Wagner, treasurer.

Arrangements for the third annual championship golf meeting between the Chicago and Milwaukee clubs, according to Secretary Dengel, have been agreed upon, the meeting to be held on Sept. 11 at a club near Milwaukee. Milwaukee has won the two previous meets.

The directors of the Plumbing and Heating Club are as follows: Manufacturers, A. M. Wagner, G. E. Ryan, E. Hoffman and G. Wilson; jobbers, N. H. Dengel, Fred Cordes, A. Steele and E. Seelman; plumbers, L. R. Schmaus, D. Stern, Charles W. Priegel and E. F. Trebs; heating contractors, John S. Jung, George Stoehr, B. Wenninger, Frank Mueller; allied industries, B. Stickler, Frank Glas, C. H. Runge and E. R. Dicks.

The club started a 60-day membership drive on June 16. The next golf meet will be held on July 10 at the Tuckaway Country Club.

Utah Master Plumbers Organize Under NRA

With the holding of regular monthly meetings of the state code association, numerous meetings of the executive committee which has charge of the enforcement of the Code of Fair Competition of the Plumbing and Heating Industry in Utah, the opening of code offices, the organizing of county code associations throughout the state where no master plumbers organization exist, and the holding of the Utah State Recovery Act constitutional and the establishing of minimum costs by a code executive committee as legal by District Court Judge Herbert M. Schiller, code activities in Utah are progressing rapidly.

W. F. Craig, for the past ten years engaged in the plumbing business in San Mateo, Calif., died recently at his home in that city of a severe heart attack in his 49th year. He is survived by his widow and one son. In recent years he was an active member of the Peninsula Merchants Plumbers' Association, coming to San Mateo from San Francisco where he was formerly engaged in business.

Fatally Hurt on Convention Trip

William Wilby of Selma, Ala.

William Wilby, prominent Selma, Ala., plumbing contractor, was injured in an automobile accident near Kingsport, Tenn., while returning from the convention of the National Association of Master Plumbers, and died in a Kingsport Hospital June 8, in his 69th year. Funeral and burial were in Selma the following Sunday. With Mr. Wilby at the time of the accident was William T. Perry, of Montgomery, past president of the Alabama Association of Master Plumbers, who was less seriously injured.

Mr. Wilby achieved national prominence as a plumbing contractor by successfully bidding on the plumbing installation for U. S. buildings in New York, Ohio, Illinois, Washington and other states. At the recent Alabama convention he was elected one of three plumbing representatives to the Alabama Construction League, the other two being Mr. Perry and Joseph W. Pate, association president.

Surviving relatives include his widow, two sisters and one son, Robert Wilby of Selma.

Buffalo Plumbers Hold Outing

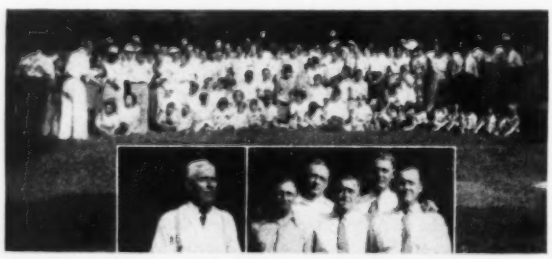
The Master Plumbers Association of Buffalo, N. Y., selected June 26 as Plumbers' Day which was celebrated at the South Shore Country Club. The committee in charge consisted of A. G. Kranichfeld, chairman; Allan A. Westphal; Roy L. Noah; Frank J. Haas and Gordon A. Webster.

Portsmouth, Va., Plumbers Elect Officers

The Master Plumbers' Association of Portsmouth, Va., held its annual meeting recently and elected the following officers for the ensuing year: President, A. L. Wright; vice president, J. A. Ratty; secretary, W. L. Bennett; treasurer, L. A. Watson. Board of directors: J. P. Harrold, W. L. Bennett, Benjamin Culpepper and A. L. Wright.

San Antonio Masters Hold Successful Picnic

The San Antonio, Tex., master plumbers recently held a successful picnic with about 200 members and visitors present. A full program with races, boating, bathing and fishing provided entertainment for the group with a baseball game bringing the fat and lean members together. The picnic was under the general direction of Harry Wharton, president of the association; George B. Logan, vice president; E. H. Jordan, treasurer, and F. Wharmund, secretary and manager. R. G. Thomas, past national director and NRA state executive, was present together with Emil Haenig, chief plumbing inspector of San Antonio, who has carried on that work there for the last 20 years, and also E. Stopper of the Southern Co.



At top: Group of Master Plumbers of San Antonio, Tex., and their families at picnic.—Lower row: Emil Haenig, plumbing inspector at San Antonio; E. J. Jordan, I. Tarrillion, chairman; Fred Geyer, Ed. Tschoepe, and Ed. Jaeckle, members of the entertainment committee

Among the Plumbing Contractors in Chicago

The Chicago Plumbing Contractors' Association upon the recommendation of its Entertainment Committee has decided to hold an outing and picnic for the benefit of its members, their families and friends in the industry on Wednesday, July 25, at Ehrhardt's Grove, Park Ridge, Illinois. The outing is designed especially for the enjoyment of the children. There will be races and games, and prizes not only for the young folks, but for older members of the family. The committee has arranged a baseball game between the master plumbers and supply men, and other contests equally attractive and enjoyable for which prizes will be awarded, will be staged. Dancing and music will also be one of the features of the outing, and a "joint wiping" contest between two old time master plumbers will be another feature of interest. This is the first picnic the Chicago association has held in the past ten years, and all members of the trade are invited to bring their own lunch and dinner. Coffee and other refreshments including ice cream, etc., can be obtained on the grounds. The charge for adults will be 50c, children free. The committee recommends that the master plumbers close their place of business, and also invite their employees to attend. Ehrhardt's Grove is located at Talcott and D Roads, Park Ridge, and easily accessible from all parts of the city. It is one of the most beautiful groves in Cook County and was selected by the committee with a view of ensuring the comfort and convenience of all who attend. A cordial invitation has been sent to all of the master plumbers of the city and also to the supply trade. The committee in charge of the arrangements is as follows:—Wm. Gawne, chairman, Chas. J. Stanley, Samuel Erman, Wm. Redieske, J. G. Zajicek, L. P. Markowski, Walter W. Sievers, Peter P. Wolff, Wm. J. Sievert, President Chas. E. Gawne, and Secretary Peter M. Munn.

A suit for $250,000 damages against the Congress Hotel in Chicago and Dr. Herman N. Bundesen, President of the Chicago Board of Health, was filed June 12 in the United States District Court on behalf of Mrs. Della Staun of Cincinnati, Ohio. The suit states that Mrs. Staun, a widow, is the executrix of the estate of her late husband, Walter F. Staun, a silk salesman, who died on November 26 last year from amebic dysentery. The bill alleges that Staun contracted the disease while he was a guest of the hotel, and that the hotel officials and Dr. Bundesen were guilty of negligence and indifference in not quarantining the hotel when they learned of the presence of the dysentery germs.

A definite ruling on the question of submitting monthly reports to the State Department of Finance under the Retailers Occupational Tax Act, has recently been obtained by the Illinois Master Plumbers' Association. Under this ruling, it is necessary for plumbing contractors to file a return for each calendar month. The department states:—"If such plumbing contractor's business is principally that of taking real property construction contracts and not the sale of tangible personal property, such contractor does not become liable for retailers' occupation tax and he should mark on the face of his return the following words or their substantial equivalent: "No tax due under regulations." "Accompanying each such return, such plumbing contractor must file a sworn statement, giving the name and address of each person or firm from whom he has during the calendar month covered by the return, purchased tangible personal property, for use or consumption. This sworn statement should be filed by him together with the return."

Five hundred Brooklyn and Queens, N. Y., master plumbers at the dinner given recently by the Brooklyn Union Gas Company

Twin Cities Members Greet Shrine Visitors

A number of plumbing and heating contractors from Minneapolis, St. Paul and nearby Minnesota cities participated in the reception to the Imperial Council of the Shrine which met at Minneapolis during the week of June 17. Clarence V. McGeary of the firm of George McGeary & Son is the potentate of Osman Temple, St. Paul. The local members who greeted visiting nobles from the plumbing industry are:

ZUHRAH TEMPLE, Minneapolis

Contractors: Karl T. Akesson, Chester Bouvran, Otto P. Bahneman, Warren T. Chapman, Charles Connor, Michael Connor, Richard N. Fager, Cy O. Gibson, A. W. C. Greening, Daniel Handelan, Leon C. Hanson, David Huston, Leslie L. Hughes, A. M. Hunter, C. E. Hasey, August Jackson, Edward A. Jansen, Louis H. Johnson, David Jones (Tracy, Minn.), Otto F. G. Kohl, L. O. Klopfer, Wm. F. Meurer, J. M. Maurer, Wm. M. Mickelson (Montevideo, Minn.), F. S. Martin, Edgar M. Olson, H. Merwin Porter, Wm. F. Porter, Walter H. Rippe, Charles F. Rose, Vernon D. Rose, James T. Sigmon, Carl J. Smith, Frank Slipka, B. E. Tunstead. *Wholesalers:* O. S. Burman, B. W. Tangeman, G. H. Deringer, Harry L. Rose, C. D. Rye, D. R. Thomas, Central Western Credit Exchange.

OSMAN TEMPLE, St. Paul

Contractors: Clarence V. McGeary (Potentate), Reuben L. Anderson, Fred Beier, William L. Neihart, Paul L. Chapel, Frank Eha, David Elder, Charles S. Harris, L. F. Nienaber, Louis H. Peter, Samuel E. Smith, Adolph Shetka. *Wholesalers:* E. R. Motz, S. S. Spencer, W. H. Ferrell (El Riad, Sioux Falls).

Mid-West Plumbers Meet at Mangum, Okla.

The Mid-West Association of Master Plumbers met on June 6 at Mangum, Okla., with a record attendance. Ralph E. Helper and H. T. Lawrence, mayor and city manager of Mangum, respectively, were guests of honor. They both gave talks on problems and conditions in the plumbing field and promised co-operation in code enforcement. An excellent fish dinner was served. Other guests were A. H. Moore and "Bill" Damon of Oklahoma City, the latter reporting on the recent national convention and on code matters.

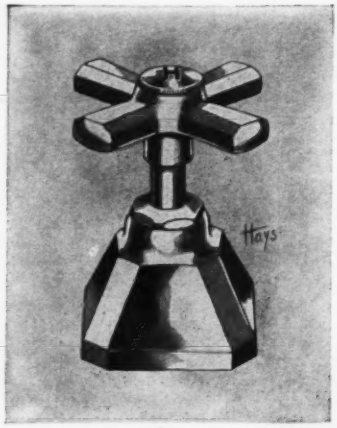
Trenton Names Committees

The Trenton, N. J., Master Plumbers Association held a meeting recently at which time the president announced the appointment of the following standing committees for the year ending April 3, 1935: Trade advancement: Albert E. Schoeller, chairman; Walter E. Bittner and Waldburg C. Dobbins. Sanitary: J. Miller Heidweiler, chairman; Leslie Burns and Fred Nitz. Educational: James L. Bennett, chairman; Daniel C. Black and Harry Jammer. Membership: Frank B. Penrose, chairman; Daniel Sisti and Emil L. Pfleider. Auditing: John C. B. Wouters, chairman; William G. Royer and Charles MacQueen. Bond: William J. Lee, chairman; John L. Lacy and W. V. Stewart. Entertainment: Charles M. Fox, Jr., chairman; Frank R. Dunn and Louis McGlone. The following committee was also appointed to study the Trenton plumbing code and suggest amendments: James L. Bennett, chairman; Albert E. Schoeller and Howard H. Martindell.

Albert E. Schoeller was made chairman of a new NRA committee and authorized to appoint the other members. He selected the following as his assistants: Eckford M. Boyd, vice chairman; Daniel C. Black, secretary; Walter E. Bittner, John H. Conard, Charles M. Fox, Jr., Leonard Deihl and John J. Eldracher.

The exhibit of the Revere Copper & Brass, Inc., of New York City at the recent convention of the National Association of Master Plumbers, held in Washington, D. C.

Hays Gems for Enduring Beauty



Hays Gems are conservatively designed to please the modern taste and yet retain their preference thru the years. People soon tire of the unusual or bizarre. Your customers will like Hays Gems on first sight and they will continue to like them for Hays has given permanence to their beauty.

Gems are of sturdy all brass construction with a deep lustrous plating of chromium that makes them always like new. Hays Gems are available in scores of combinations in Bath, Shower and Lavatory matched sets. Write today for the Hays Catalog describing all Hays Built-in Brass Goods.

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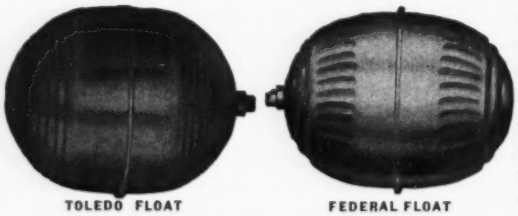

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Leader Tank Balls seat perfectly every time.

Reichert Floats are made of heavy gauge sheet copper, two sections seamed in securely. The reinforced spud makes them the strongest on the market. They stand up even when service is particularly severe such as in factories, schools and public buildings.

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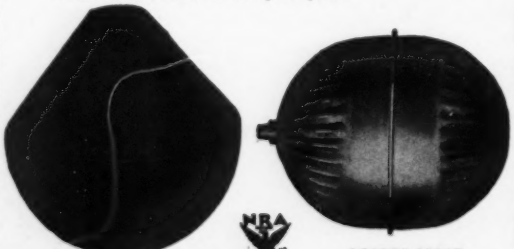

THE LEADER TANK BALL LEADER FLOAT

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Ohio Officers Attend Zone Meeting in Zanesville

The meeting at Zone 3 of Ohio Master Plumbers Association was held recently at Zanesville. Zone President Frank Bohn of Zanesville presided. There were 42 master plumbers present, and the meeting was honored with the presence of State President Howard C. Baker of Toledo, Past State President Oliver Hoffman of Akron, State Code Director Walter Eynon of Canton and State Director William Gesling of Lancaster. Following talks on organization and codes, several new members were admitted into the association.

Chicago Plumbing Trades Golfers Meet at Wilmette Golf Club

The June tournament of the Chicago Plumbing Trades Golf Association, comprising master plumbers and supply men, was held at the Wilmette Golf Club, Glenview, Illinois, Thursday, June 21, under ideal weather conditions. The tournament brought out the largest attendance which the association has enjoyed in the past few years, 65 members and guests participating in the meet.

In Class A, the low net was won by Joe Comer with a 78 gross, 8 handicap and a net 70. The runner-up in this class was Henry O'Callaghan with a gross 87, handicap 17 and net 70. Third prize in this class went to Wm. Love with a 91 gross, 17 handicap and 74 net.

In Class B, Fred J. Wagner with 106 gross, 24 handicap and 82 net captured first prize. P. J. Brown with 107 gross, 25 handicap and 82 net was second with Max Greenberg third with a 105 gross, 22 handicap and 83 net.

Wm. R. Brookman with a 122 gross, 38 handicap and 84 net was successful in the blind bogey.

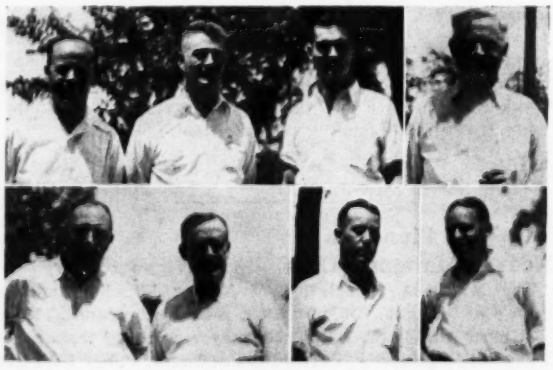
The prizes for the winners in Class A and B consisted of golf balls, six, four, and two respectively.

The flight winners were as follows:—Frank B. Hackett, H. W. Mollison, Herman Scheel, Harry Ryan, Porter West, Peter M. Munn, Harold Burr, Chas. Barrows, C. D. Little, John Guldan, Ted Seabrooke, E. Stevenson, Frank Fabbri, Tom Bushnell, W. H. Gregg, and R. V. Sawhill.

The dinner in the evening presided over by Chairman of the Golf Committee, Ed Mortimer, was a most enjoyable affair.

The prize winners were announced by the official scorer, Wm. Redieske, and the prizes distributed by the secretary of the association, Peter M. Munn.

The Chairman announced that the next tournament would be held on Thursday, July 12 at the River Forest Country Club. The members will be honored with the presence of the



Top row, left to right: E. W. Rietz of Powers Regulator Co., Theodore Seabrooke of Jas. B. Clow & Sons, H. Mollison of National Tube Co., and Wm. J. Sievert, all of Chicago.—Bottom row: John A. Corboy of M. J. Corboy Co., Frank Hackett of Brunswick-Balke-Collender Co., Fred J. Wagner, and Harold Burr of Fettes, Love & Sieben, all of Chicago

president of the National Association, John J. Calnan, and the secretary, Chas. E. Gawne, who is also president of the Chicago Local Association.

The following is a list of the individual scores made at the tournament:

Player	Gross	Net	Player	Gross	Net
W. Barr	118	94	N. J. Mergenthaler	113	90
Chas. Barrows	100	82	H. W. Mollison	89	77
John Blair	127	100	Ed. Mortimer	102	83
J. Bradley	120	90	Peter M. Munn	104	82
Wm. R. Brookman	122	93	J. Newar	107	84
P. J. Brown	107	82	Henry O'Callaghan	87	70
Harold Burr	86	76	Wm. Poers	123	98
J. Bushnell	110	85	Henry P. Reger	123	102
T. Bushnell	98	76	E. W. Rietz	95	78
Joe L. Comer	78	70	J. Rothschild	147	117
John A. Corboy	97	82	Harry Ryan	90	78
Howard Crum	98	84	R. V. Sawhill	107	85
Chas. A. Dreier	115	93	Herman Scheel	119	95
Frank Fabbri	100	83	Ted Seabrooke	95	77
James W. Fettes	108	87	Rob. Sells	93	83
K. Foster	99	84	Phil Sieben	105	86
J. Friedman	111	89	Wm. J. Sievert	97	78
Max Greenberg	105	83	Wm. J. Spillane	94	80
W. H. Gregg	90	76	Wm. St. Bernard	113	90
E. Grooes	96	81	J. Steinfel	94	79
John Guldan	97	78	E. Stevenson	88	77
Frank B. Hackett	92	74	Henry Swade	114	91
George Hoffmann	118	95	Thomas Wade	97	80
C. H. Lippey	107	94	E. C. Wagner	128	101
C. D. Little	101	79	F. J. Wagner	106	82
E. Long	97	81	R. J. Weber	108	86
Wm. Love	91	74	J. Weil	129	89
John MacKenzie	112	96	Porter West	89	77
John Madden	107	88	Harry Yelton	111	88
George Matthews	133	96	E. J. Young	98	78

E. L. Freeman

E. L. Freeman, founder of the plumbing business bearing his name and president of the Master Plumbers' Association of Tulsa, Okla., for the last four years, lost his life May 19 in an automobile accident, while on his way to the mountains in the southeastern part of Oklahoma, where he planned to spend a week's vacation. His son Eugene Freeman will continue the business. W. L. McCaskey is now president of the Tulsa Association.

T. T. Rockett, Sr.

T. T. Rockett, Sr., for many years engaged in the plumbing and heating business at 631 North 19th Street, Philadelphia, Pa., died at his home in that city on Sunday, May 13. Mr. Rockett was a member of the Master Plumbers' Association of Philadelphia and he had a large circle of friends in the trade.

Fred P. Speth

Fred P. Speth, an honorary member of the Master Plumbers' Association of Philadelphia, died recently at his home in that city. Mr. Speth was a member of the board of directors of the Philadelphia Association from 1912 to 1919. He retired from business several years ago, but he remained interested in the welfare of the association and its members until his death.

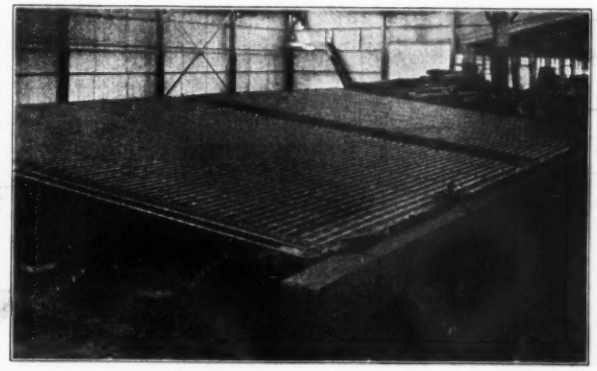
Elvin H. Mackay

Elvin H. Mackay, who for forty years had been a member of the Master Plumbers' Association of Philadelphia, Pa., died recently at his home in that city in his 75th year. Mr. Mackay was sergeant-at-arms for the Philadelphia Association for more than 25 years, and it was seldom that he missed a meeting.

H. L. Hurlburt

H. L. Hurlburt, who conducted a plumbing business at 127 South 46th Street, Philadelphia, for many years, died recently at his home in that city. He was a member of the Master Plumbers' Association of Philadelphia.

NO TWO PEAS

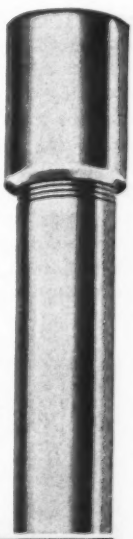


CAN EQUAL

FRETZ-MOON UNIFORMITY

HOW many times have you used the old simile, "Alike as two peas in a pod?" And yet it is doubtful if you will ever find a pod in which there are two peas absolutely uniform in likeness. Both may be green, just as all black pipe is black, or as all galvanized pipe is galvanized. Both may be round in shape. But examine them closely, and you'll find, just as when you examine pipe closely, that there's a difference.

The uniformity of no two peas in any pod grown can equal the uniformity of Fretz-Moon Pipe, for here is pipe that can be nothing but uniform. It is made by a scientifically-controlled "continuous process," automatic in operation, which takes the steel skelp at one end of a specially designed furnace and deposits it in the form of lengths of pipe on the cooling racks. The skelp, especially made for this process, is structurally and physically uniform—the finished pipe retains this plus uniform weld, size, roundness, straightness, ductility and cleanliness.



The next time you purchase pipe, specify Fretz-Moon, and you'll discover why Fretz-Moon users say, "Alike as two lengths of Fretz-Moon Pipe."

FRETZ-MOON PIPE

BLACK AND GALVANIZED

FRETZ-MOON TUBE CO., Inc., Butler, Pa.

Many Attend Pennsylvania Meeting

William A. Schneider of Scranton Re-Elected President

THE Pennsylvania State Association of Master Plumbers held its fortieth annual convention in Uniontown, Pa., with headquarters at the White Swan Hotel, June 18, 19 and 20, and it was a most successful meeting. Coming so soon after the National Convention, the main interest of the delegates was centered on the NRA code and its enforcement.

Retiring National President Robert J. Barrett and National Executive Secretary Jos. G. Hildebrand were honor guests of the convention and not only explained the Code in detail but answered all questions pertaining to same.

In recognition of his excellent work during the past year, the Association re-elected William A. Schneider of Scranton as president. He reappointed Jas. H. Lally of Olyphant as secretary-treasurer and the appointment was approved by the convention.

Harry A. Saeger of Allentown was elected vice president, and the state directors elected are as follows: John Sabin, Brownsville; Walter Raid, Philadelphia; F. J. Hanley, Pittsburgh, and Mac H. Perry, Meadeville.

The officers were installed by National Director Walter Williams of Wilkes-Barre.

The invitation of Harrisburg to hold the 1935 convention in that city was accepted.

The main address of the convention was given by Retiring National President Robt. J. Barrett, who is now National Code Director.

Using the words of Secretary Hurley, Mr. Barrett said: "The fight has just begun, and no obstacle shall prevent the enforcement of the Code.

"President Roosevelt in signing our Code has given our plumbing business a New Deal. We owe it to ourselves and our families to give them the type of living they deserve, and this code will help us do it.

"There are many things in our code that will make ours a better business and two of the important parts are those pertaining to wages and hours. We owe a duty to labor. We have made the standards of living in America higher than those in any other country. We must give labor wages that will enable a worker to live up to those standards. Your code establishes many fair trade practices. You cannot talk unfairly about your competitor as it is unfair trade practice."

Mr. Barrett paid tribute to the capability and quality of the incoming National President, John J. Calnan of Chicago, and asked the Pennsylvania Association to give Mr. Calnan its 100% co-operation.

He also praised the staff of the National office, mainly National Executive Secretary Jos. G. Hildebrand.

National Executive Secretary Jos. G. Hildebrand was also a speaker and touched on the work of the National Association headquarters in relation to the enforcement of the code.

He called attention to that part of the code that makes it mandatory for every master plumber to keep an adequate set of books, and he added that the National Association can supply bookkeeping systems at a minimum cost.

President Barrett and Secretary Hildebrand also answered many questions concerning the code and its enforcement.

RESOLUTIONS

The following resolutions were adopted:

1.—That the President appoint a committee to draft a state-wide plumbing code to cover first, second and third class cities, boroughs and townships, and that same be presented to the State Legislature with the health angle as a basis for same.

2.—That the number of zone delegates be increased to a number decided upon by the President.

3.—That the mid-winter meetings be continued.

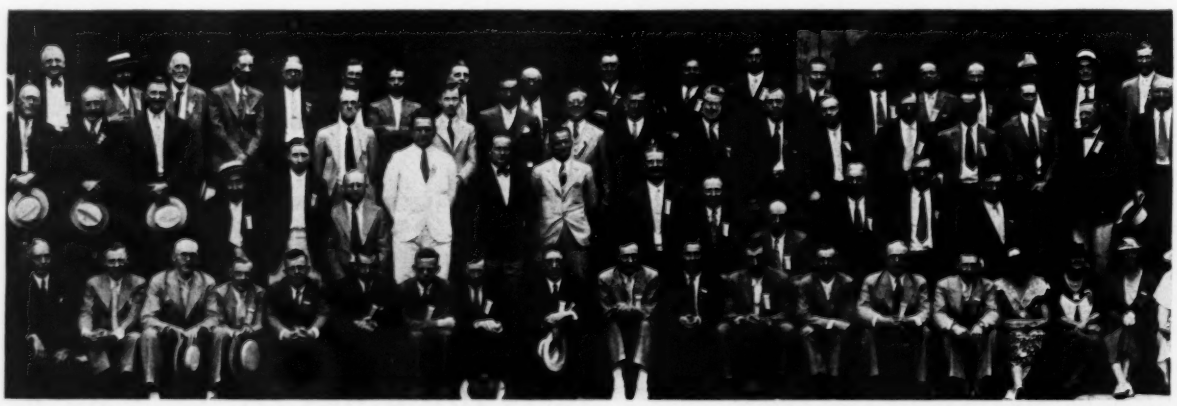
4.—That the Secretary write the state legislators that having plumbing and heating work done by state employees is a detriment to the plumbing and heating trades.

5.—That Pennsylvania Association concurs in the New Jersey resolution, amended and passed by the National Convention, relating to electrical ground connections.

6.—That associations and plumbers in sections not working under plumber codes should insist that installations be made according to the General Construction Code.

7.—That the Pennsylvania Association recommends adherence to the general policy of not bidding through general contractors on plumbing, heating and air conditioning work on public and private buildings.

8.—That it is for the best interests of the property owners to have a plumbing system properly designed and installed



Delegates and Guests Attending the Fortieth Annual Convention of the Pennsylvania State Association

with fixed connections and with water services, water supplies and lead waste where concealed by means of round wiped plumbers' joints.

CONVENTION COMMITTEES APPOINTED

President Schneider appointed the following convention committees:

Credentials: Sol. B. Litman, Uniontown; L. G. Carson, Oil City; John Richards, Johnstown.

Resolutions: Robt. H. Pflug-Felder, Philadelphia; Howard Fritz, Reading; Carl V. Wenzel, Scranton.

Auditing: F. C. Patterson, Bradford; L. R. Wickerham, Donora; R. T. Lord, Meadville.

Sergeant-at-Arms: J. Roy Baer, Uniontown; Chas. R. Meyers, Monongahela; Earl G. Boring, Lewistown.

Nominating: Walter C. Williams, Wilkes-Barre; Thos. F. Scanlan, Pittsburgh; Geo. M. Hicks, Philadelphia.

1935 Convention City: Carl J. Forve, Wilkes-Barre; Harry Saeger, Allentown; Chas. P. Craig, Uniontown.

The convention was called to order by Sol B. Litman, president of the Uniontown Master Plumbers Association and general chairman of the convention committee.

President Schneider gave his report on his activities during the past year. He covered his various trips through the state, code work in the state, paying particular tribute to Jas. H. Lutz, Jr., NRA Code Committee member for Pennsylvania; the zone delegate plan which has proved very effective; the work of the board of directors; the membership work which brought a substantial increase in members, and finances, showing the treasury of the State Association as being in a healthy condition.

Mr. Schneider also made the recommendations; that the incoming state officers give consideration to the advisability of a state-wide plumbing code; that they consider the advisability of increasing the number of zone delegates to better cover the state, and that they continue the mid-winter meetings.

Mr. Lally reported as state secretary, covering membership needs in various sections of the state. He presented a map showing locations of local associations and individual members in the state. It is a fine piece of work. He reported 42 local associations and state membership of 932, an increase of 484.

The report of the auditing committee was presented by F. C. Patterson, chairman.

The report of the legislative committee was presented by John H. Miller, Harrisburg, chairman. He stated that Senator W. Warren Barbour is putting forth renewed effort to have Senate Bill 1066 considered by the Senate Committee on Public Buildings and Grounds. This bill makes mandatory the separation of plumbing, heating and electrical bids from general contracts on public buildings and work.

President Schneider introduced Thos. M. Dugan, National Tube Co., and two visitors from the West Virginia association, Guy Hawkins and Arch P. Fleming, both of Fairmont.

The following Zone Delegates rendered their reports covering their various districts: Geo. Ethridge, Belle Vernon; F. J. Hanley, Pittsburgh, and E. D. Swoyer, Allentown.

National Director Walter C. Williams of Wilkes-Barre addressed the convention on "Association Activities."

He touched on the code but did not go into details as it was to be covered by other speakers.

Touching on organization, he wondered where the master plumber would be in regards to a code, if it were not for the National Association.

He urged every member to try and get every master plumber in the country to join the association.

He advised the local associations to plan their meetings ahead of time and make them educational and interesting.

The report of the Sanitary Committee was presented by its Chairman, Howard Fritz of Reading. It expressed thanks to the Medical Association, Chicago Master Plumbers Association, Dr. Bundesen, Chicago Health Dept., Plumbing and Heating Industries Bureau and the trade papers for their handling of the Chicago dysentery epidemic.

Hon. H. G. Minerd, Mayor of Connellsville, was introduced as the man who appointed a plumbing inspector and examining board over the protests of the city council. The Mayor is a doctor and a believer in the plumber as a man upon whom the sanitary conditions of a city depend.

Jas. H. Lutz, Jr., paid tribute to the Mayor for his efforts.

Jas. H. Lutz, Jr., Harrisburg, presented his report as National Sub-Committeeman on the NIRA.

He was given a rising vote of thanks and three rousing cheers for his wonderful efforts during the past year.

Harry L. Stilwell of Philadelphia, chairman of the educational committee, presented his report. He stated that the lack of finances had kept their work at a minimum. He touched on ethics in our business, the value of organization and what our industry has done for the advancement of civilization. He urged the members to get the best possible type of apprentices.

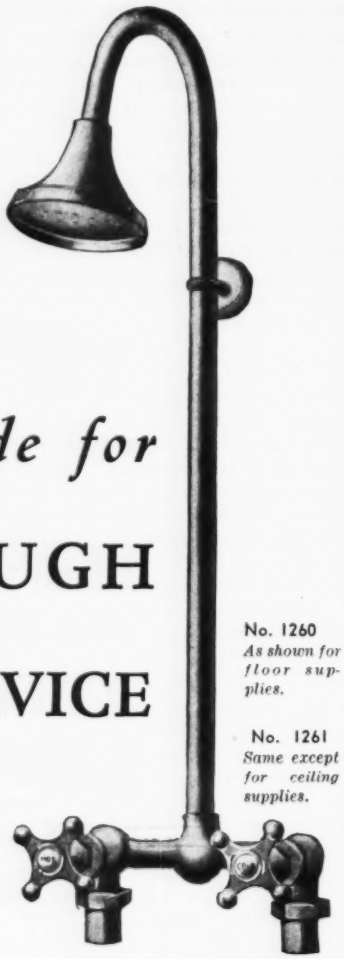
In conclusion he said if every plumber would live up to our new code, most of their problems would be solved.

Walter Raid of Philadelphia, a state director, spoke briefly on education, association and co-operation as the basic fundamentals for the success of the members.

Carl Forve of Wilkes-Barre, also a state director, made a report on his activities during the year.

Stanley L. Kedzierski of the Domestic Commerce Division, Bureau of Foreign and Domestic Commerce, Wash-

of Master Plumbers, Held in Uniontown, Pa., June 18, 19 and 20



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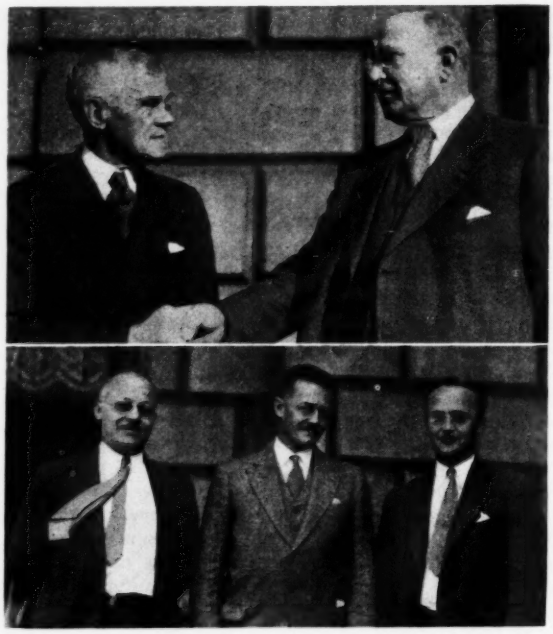


At Top, Left to Right: Frank F. Schimpf, Albany, and Thomas M. Hennessey, Oswego, N. Y. At Bottom, Left to Right: George J. Glauber of David Bell Co., Buffalo; H. P. Heil and A. F. Sheldon, both of Chase Brass & Copper Co., Waterbury, Conn.—From photos taken at the recent convention of New York State Association of Master Plumbers

ington, D. C., spoke on "The Need for Plumbing."

He stated there have been many changes in the ways of doing business and the plumber must revamp his selling and service methods. He must merchandise at a profit. No matter how good the material is, it loses much of its value unless installed by a competent, licensed plumber.

He urged the plumbers to be able to meet requirements of new construction, to be able to properly handle emergency problems and to study proper financing of their business.

T. F. Rockwell and C. M. Humphreys of the Carnegie Institute of Technology, Pittsburgh, Pa., presented a paper on "Cross Connections."

Thos. G. English, assistant chief plumbing inspector of Pittsburgh, pinch-hitting for Dr. Ray P. Moyer, director of health of the city of Pittsburgh, read the Doctor's paper on "Health and Amebia."

Paul H. Fritz, president of the Reading Suburban Association, read a paper giving the views of the plumbers in his territory, questioning the practicability of the code and doubting that it can be enforced.

Robt. Pflug-Felder of Philadelphia answered Mr. Fritz and refuted some of his objections.

Votes of appreciation were extended to the Uniontown Master Plumbers, their ladies and the trade press.

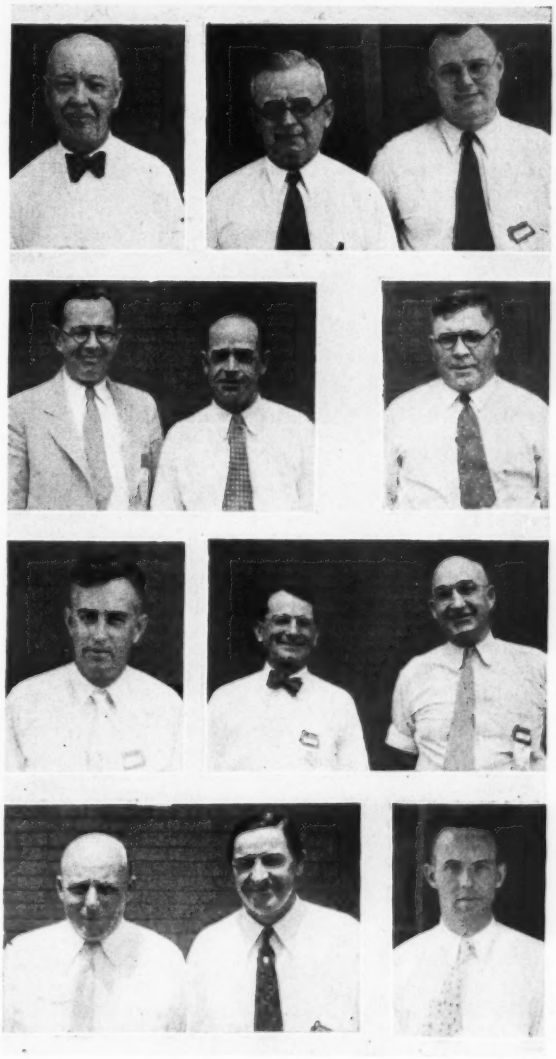
ENTERTAINMENT FEATURES

The visitors at the convention were entertained highly by the local members.

Monday evening there was a reception at the White Swan Hotel with a fine floor show and dancing.

Tuesday evening they attended a stag party at Chief William's Club House.

The final night the annual banquet and ball were held in the White Swan Hotel.



Top row, left to right: H. O. Green, Tulsa, Okla., treasurer of National Association of Master Plumbers; Henry Kruger, past state president and Wray M. Scott, president, both of Omaha. Second row: W. Yousem, president of Omaha association and W. Miller, president of Lincoln association; C. A. Rutherford, Hastings. Third row: John A. Nelson, Omaha, chairman registration committee; V. I. B. Smith, vice president and J. F. Niblock, secretary of Lincoln association. Bottom row: J. H. Martig, R. E. Krimlofski and B. Grunwald, Jr., all of Omaha. Photos taken at Nebraska convention

Nebraska Retail Plumbers Study NRA Code

AT a two-day convention and code meeting held by the Nebraska Retail Plumbers Association in Omaha, June 20 and 21, every phase of the Code of Fair Competition for the Plumbing Contracting Industry was discussed, and the following resolution of protest sent to the Code Authority:

"WHEREAS: The Nebraska Retail Plumbers Association, in convention assembled this 21st day of June, 1934, deem the $1.20 per hour wage scale for journeymen (mandatory under the code of fair competition for the Plumbing Contracting Division of the Construction Industry) unfair to the public, to the employer and to the employee; and

"WHEREAS: This per hour mandatory charge is excessive and not in conformity with wages in other lines of construction in our community, especially so in the smaller cities and rural districts;

"THEREFORE BE IT RESOLVED: That the Nebraska Retail Plumbers Association hereby protest the said mandatory hourly wage rate.

"BE IT FURTHER RESOLVED: That the NRA Authorities be requested to hold a public hearing on wages in this state; said hearing to be held at a point centrally located relative to the smaller towns away from the metropolitan cities.

"BE IT FURTHER RESOLVED: That if a hearing can not be had, that the Nebraska Retail Plumbers Association be notified as to the proper methods of procedure necessary to secure a reduction in the hourly wage in outlying districts, before the expiration of the 180 days allowed for this purpose as specified in their code."

No sooner had the terms of the code been read than it developed that the minimum wage scale of $1.20 per hour for journeymen was the barrier that seemed prohibitive.

At the present time the wage scale in Nebraska is $1.00 per hour in the larger cities, while in some of the smaller towns, where they do not have enough plumbing to keep a man full time, the journeyman is hired at a weekly salary.

Many expressed the opinion that if put in force, the necessarily high cost of plumbing will mean no plumbing at all in the rural districts.

Top row, left to right: E. R. Beattie, Wolverine Brass Works, Grand Rapids, Mich.; L. J. Zimola, Schuyler; H. H. Clements, Crane Co., Omaha; K. E. Copeman and C. L. Armstrong, both of Lincoln; J. S. Bailey, Baker Mfg. Co., Omaha; H. F. Moore, Alma; C. T. Lawrence, manager of Omaha branch of U. S. Radiator Corp.; G. H. Wentz and J. P. Cox, both of Lincoln. Bottom row: C. W. Hadan, Bennington; Axel Benson, Grand Island; G. W. Bergen, U. S. Supply Co., Omaha; O. E. Davis, Hoffman Specialty Co., Waterbury, Conn.; Frank Gage, Fairbury; A. J. Weyant and George Underwood, both of Lincoln; Leo U. Swanson and C. Merritt, both of Omaha; Ralph Kurritzsky, Nebraska City. Photos taken at Nebraska convention

After much discussion as to whether the new wage scale is really in force, the following telegram was sent to National President Robert J. Barrett:

"Nebraska Retail Plumbers Association assembled in state convention would like to be advised if wages and hours in plumbers' code are in effect. Our state is protesting the $1.20 per hour mechanics' wages. Must we pay the code wages while we are protesting the wage scale? Does the code apply to towns smaller than 2,500 population? Please wire reply.—Wray M. Scott, president."

The reply is as follows: "Replying to telegram, all code provisions, including hourly wages, rates, must be complied with regardless of attitude. Wage provisions apply to all towns regardless of size, as executive order exempting towns under 2,500 population does not apply to construction industry. Signed, Robert J. Barrett."

Many of the members expressed the belief that the men who framed the code do not understand the small town plumbers' problem and claimed that they were not represented on the code committee.

National Treasurer H. O. Green, who was the official representative of the National Association, assured the delegates that the national officers are very well posted as to the problems that confront the small town plumbers and the so-called one man shop and that they did all that was humanly possible to look out for their interests.

Mr. Green explained that the national officers tried to get in a clause that would protect the smaller towns from paying city scale of wages but that the code authorities would not accept such a clause.

He told the members that the code is not all that their national officers asked for, though it is the very best they could get. He pointed out the many good features of the code, and said that if they work in cooperation with the code, and see to it that their competitors do the same that they will find it a great benefit to them and to the industry.

Roy E. Brewer, NRA state labor compliance officer, who addressed the meeting, said that one of the objects of the

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Photos Taken at N.A.M.P.

Row 1.—Henry O'Callaghan, Chicago; George T. Noyes, Presque Isle, Me.; C. C. Gray, B. F. Sturtevant Co., Boston, Mass.; C. E. Carlson, state president, Sioux Falls, S. D. Row 2.—R. M. Little, Fretz-Moon Tube Co., Inc., Butler, Pa.; T. McDermott, T. D. Valve Co., Boston; George H. Derbyshire, manufacturers' agent, Philadelphia; M. R. Jackson, Northern Indiana Brass Co., Elkhart, Ind. Row 3.—S. A. Gorman, Bell & Gossett Co., Chicago; I. W. Hunter, Frank S. Dykes and H. C. Worrall, all of Philadelphia, Pa.; C. E. Pullum, Bell & Gossett Co., Chicago. Row 4.—William Redieske, Eagle-Picher Lead Co., Chicago; E. D. Noland, L. H. Dietz and William K. Hoyt, all of H. A. Thrush & Co., Peru, Ind.; Claude W. Owen, president, E. G. Schafer & Co., Washington, D. C. Row 5.—P. R. Mork, New York Manager and C. D. Little, vice president, both of Crane Co.; H. O. Nelson, Nelson Co., Detroit, Mich.; A. A. Chambers and J. C. Siegle, both of Youngstown Sheet & Tube Co., Youngstown, O. Row 6.—James McStay and Howard Smith, both of Philadelphia; H. E. Stevens, Hutchinson, Kans.; Frank Murphy, St. Louis, Mo.; Edward F. Quaid, Philadelphia. Row 7.—Joseph G. Hayes, state president, Indianapolis, Ind.; George Hill; George Dehn, Compound Injector and Specialty Co.; Rupert J. Weber; George Hoffman, Crane Co.; Joseph Pireaux and Ben Weil, both of Weil-McLain Co., all of Chicago. Row 8.—T. W. Gamble, National Tube Co., Pittsburgh; Norman J. Radder, Plumbing and Heating Industries Bureau, Chicago; Joseph A. High, chairman of the exposition, Washington, D. C.; Francis C. Dorsey, Baltimore, Md., chairman of conference committee, National Association. Row 9.—M. D. Rose, assistant general manager and J. A. Messer, president of James A. Messer Co., Inc., Washington, D. C.; W. B. Gifford, Washington manager; A. R. Herske, vice president and general manager of sales, and R. F. LeHote, assistant general manager of sales, all of American Radiator Company. Row 10.—Mr. and Mrs. C. D. Dunlap and son, Joseph; Mrs. and Mr. J. J. Lawler, all of Springfield, Mo.; J. F. Stone, Johns-Manville. Corp., New York City.

NRA is to increase wages and that since the NRA has been in effect wages have been increased 72 per cent. He said that the code means just what it says and that there is no question but that the law as stated in the code is constitutional. He said that labor must have an equal voice in any adjustment of the wage scale and said that the code wage scale is subject to adjustment, provided said adjustment is not below the minimum scale of $1.20 per hour.

Mr. Brewer said that "The government has placed the responsibility on business men of administering the codes under which they operate, eliminating unfair trade practices and maintaining decent hours of work and pay." "There will be violations, of course, but the business man must assume the attitude that he is his brother's keeper." "The man who violates the code is unfair, not only to you but to all others in business. If you fail in your responsibility, the government will see that the codes are enforced. If you want the code administered you will find us your friends. If you do not want it administered, you will find us your enemy." "The government gives the right to every employee to make a complaint, and you must not discharge an employee for making a complaint. If you hire a man and pay him less than the code provides for, you are a violator of the law and are subject to prosecution."

Aside from the discussion of the code, very little business came up. Both State President Wray M. Scott and E. Yousem, president of the Omaha association, gave interesting reports of the last national convention in Washington, which they attended.

I. Shuler, district manager of The Home Owners Loan Corporation, told of the purpose of the corporation in the Omaha district. In part, he said that within the next year the corporation must spend about two million dollars on general reconditioning work on houses and, of course, part of that will go to the plumbing contractor. Only contractors who comply with the rules of the NRA will be considered in this work.

National Treasurer H. O. Green told of the various activities of the national officers and stressed the fact that no

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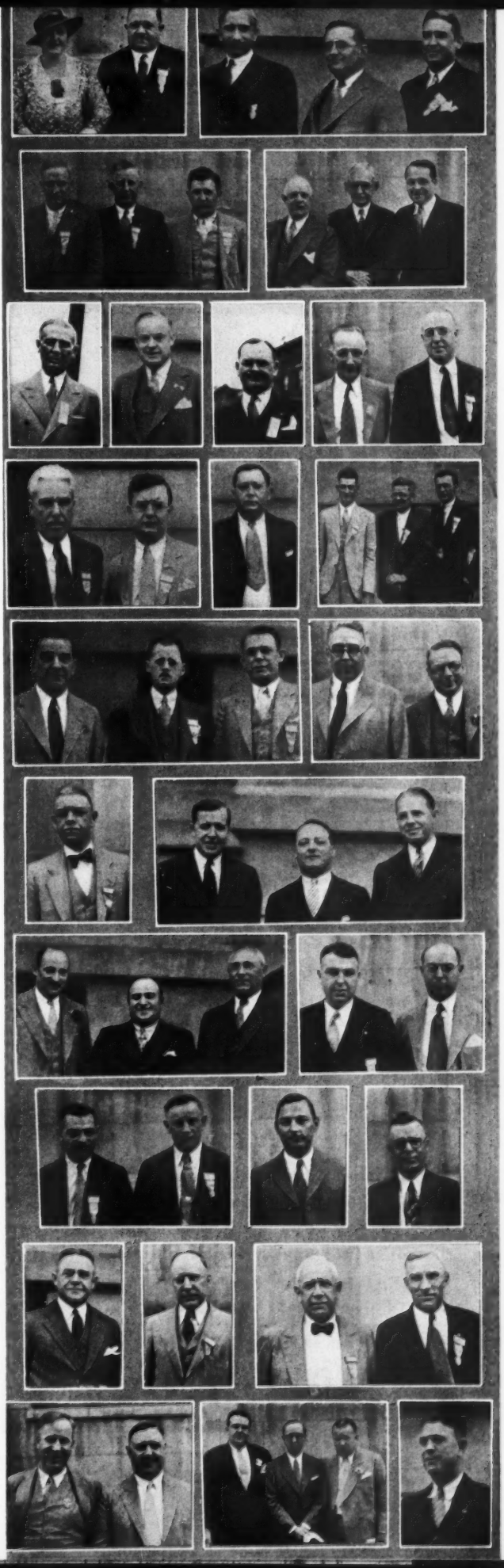
Convention in Washington

Row 1.—Mrs. and Mr. Charles Wachsmuth, Baltimore, Md.; H. F. Merrifield, Washington, D. C.; G. M. Hurlbut, sales manager, pipe and tube division and Elmer T. Lang, Philadelphia, all of American Brass Co. Row 2.—P. H. Smith, York, Pa., B. C. Poff and L. K. Poff, both of Mt. Wolf, Pa.; J. J. Crotty, vice president, Central Foundry Co., New York; C. H. Cronin, Boston, Mass., and John J. Hall, vice president, Standard Sanitary Mfg. Co., Pittsburgh, Pa. Row 3.—Henry P. Reger, state president, Chicago; C. W. Farrar, Excelso Products Corp., Buffalo; Charles E. Gawne, Chicago, association president; W. B. Everts, Lancaster, Pa.; Walter Williams, national director, Wilkes Barre, Pa. Row 4.—F. D. Reed, past president and F. C. Schilling, Jr., state president, both of Los Angeles, Cal.; Louis Croll, New Britain, Conn.; Charles McCauley, Oreland, Pa.; John M. Reading and James P. McEntee, both of Glenside, Pa. Row 5.—Walter Fitts, O. L. Knapp and P. B. Andrews, all of Revere Copper & Brass, Inc., New York City; M. C. Gillett, Hoffman Specialty Co., Inc., Waterbury, Conn., and R. C. Bolsinger, Norristown Magnesia and Asbestos Co., Norristown, Pa. Row 6.—Charles M. Swinnerton, national director, Los Angeles, Calif.; T. E. Conklin, National Tube Co., Pittsburgh, Pa.; R. D. Bitzer and H. C. Schmidt, both of John G. Kelly Co., New York, N. Y. Row 7.—G. Schwartz, A. A. Kline and H. Greenberg, all of Kings County Association, Brooklyn, N. Y.; E. G. Byrd, Norfolk, Va.; J. L. Pace, Roanoke, Va. Row 8.—Thomas J. Thaler and Chester R. Weaver, both of Baltimore, Md.; Warren Webster. Jr. and E. K. Lanning, sales manager, both of Warren Webster Co., Camden, N. J. Row 9.—Harold Maddock, International Nickel Co., New York City; H. I. Schulz, manager, Crane Co., Richmond, Va.; Edward Frank, Cincinnati, O.; William Gesling, Lancaster, O. Row 10.—Daniel J. Keating, Philadelphia; H. Frank Corbit, Reading, Pa.; R. H. Gardner, A. M. Byers Co., and Charles P. L. Moran, manager, Crane Co., both of Washington, D. C.; J. Lewis Comer, Crane Co., Chicago; C. M. Jones, Raleigh, N. C.



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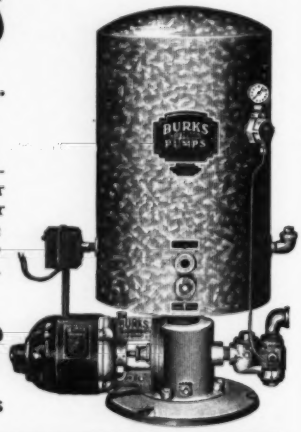

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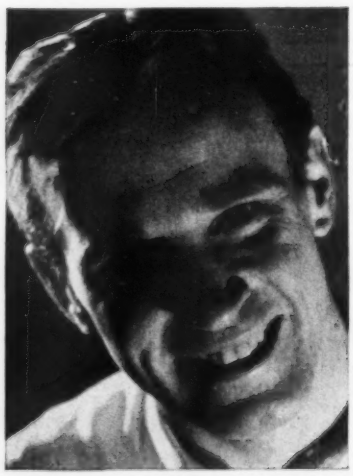


"I never have to doctor THIS Solder"

Eagle Wiping Solder works the way you like it to work on all kinds of jobs under all kinds of conditions. Made to a well balanced formula from the highest grades of new metals. Cleaner. Smaller loss from impurities, dross or oxides. Try Eagle once and we believe you'll stay with it for life.

THE EAGLE-PICHER LEAD COMPANY • CHICAGO • JOPLIN • CINCINNATI

use EAGLE wiping solder

national officer receives a cent of pay for the time and effort he gives to the association. He described the national convention as just a group of men who have enough interest in the industry to meet and give their time and attention to it, and said that the last national convention consisted of more than 1,800 such men representing 46 states.

State President Wray M. Scott gave a brief report, which showed that the state association has 118 members and a small balance in the treasury. He appointed committee chairmen to look after the business of the convention, and at the request of the code authorities named eight zones for the state, subject to the approval of the National Code Authority.

The election of officers for the following year resulted as follows:

President, Wray M. Scott, Omaha.
Vice President, W. Miller, Lincoln.
Secretary, E. H. Brown, Omaha.
Treasurer, Leo Baroch, Omaha.

The social event of the meeting was a banquet held at the Rome Hotel, at which President Scott presided as toastmaster. The banquet was followed by dancing.

A note of sympathy was sent to B. Grunwald of Omaha, a past state president, who is in the hospital following a minor operation.

Authority—

(Continued from Page 24)

administrative subdivisions and recommending the appointment of state and local administrative agencies.

"In view of the fact that the Divisional Code Authority can only submit a budget, and levy assessments in line with that budget, after it has been approved, all persons charged with the responsibility of administering the Code will have to work without compensation until the budget is approved. I think you should know, though, that the budget provides for compensation for every person who is appointed to administer the Code. This applies to State and Local Code Compliance Committees and others actively engaged in code administration. This information is given you in advance of submitting the budget so that you may realize that the efforts of those engaged in code enforcement will be adequately rewarded.

"While we realize and take full consideration of, the attitude of impatience on the part of some of the members of the industry, we feel that every effort should be made to quiet this impatience and to advise the members of the industry that the delay in putting the Code into effective operation is not caused by any lack of activity on our part, but is due to the mass of red tape in the NRA. After all, our Code is one of some three hundred and the NRA is swamped with the mass of work which has to be done. In defense of the NRA, we will say that we have seen no evidence which would lead us to believe that they are holding up our code enforcement procedure. We are merely taking our rightful place among other industries in a smiliar position.

"Please do everything you can to allay the suspicion that the Divisional Code Authority is in any way resting on its oars or is letting events take place without its active participation. We feel that a general dissemination of the information contained in this bulletin should be made to the end that those engaged in the division, will have confidence in the Divisional Code Authority. Lack of confidence on the part of those engaged in the industry will hamper the work of the Code Authority and will further delay the day when order may be brought out of chaos."

(Signed) ROBERT J. BARRETT.

Delegates and Guests Attending the Thirty-ninth Annual Convention of Washington State Association of Master Plumbers at Bremerton, Wash.

Washington State Urged to Back Codes

ENETAI INN at Bremerton, Wash., was the scene of the 39th annual convention of the Washington State Association of Master Plumbers, which was held Friday and Saturday, May 25 and 26, with a good attendance.

Among the outstanding features of the convention were thorough discussions of the code of fair competition for the plumbing contracting industry, a most instructive address on "Sanitation," talks on the sale of plumbing fixtures and materials by "direct to you" and mail order houses, and talks on "The Amebic Dysentery Epidemic," "Sewer Gas," and "Domestic Water Supply and Sewage Disposal."

OFFICERS ELECTED

The election of officers resulted as follows: President, E. G. Spangler, Seattle; Vice-President, L. N. Hein, Bremerton; Secretary-Treasurer, B. M. Richards, Everett.

Code Authority for State: E. G. Spangler, chairman; C. G. Tegenfeldt, Bellingham; R. D. Minkler, Tacoma; Edward Evans, Spokane; Milton Morton, Yakima; C. F. Twist, Seattle; L. N. Hein, Bremerton. Non-Members: S. T. Miller, Spokane; Max Rosen, Tacoma; Ed. Wambem, Seattle.

Local Code Authorities: Aberdeen: Mrs. Grace Barton, Frank Snell, S. J. Kalina.—Bellingham: B. W. Groom, Peter Clark, and non-member, A. J. Blythe.—Bremerton: J. E. McGillivrae, T. L. Avery, and non-member, L. L. Lent.—Chehalis: C. E. Loofbarrow, Fred Svinth, and non-member, George Ingraham.—Everett: R. M. Westover, G. P. Zaat and non-member, Harry Dunn.—Longview: Jas. K. Marshall, J. H. Kelley, and non-member, J. R. Muntinga.—Port Angeles: J. C. Breitlauch, Peter Norby, and non-member, C. R. Crouten.—Pullman: Charles Lamont, C. M. Weldeman, and non-member, M. France.—Seattle: F. C. Hellenthal, C. P. Daly, and non-member, A. B. Terry.—Sedro Woolley: Charles Ewing, Wm. Thompson, and non-member, Julius Nelson.—Spokane: H. L. Patten, James Smyth, and non-member, John Bulmer.—Tacoma: Roy E. Thompson, G. A. Weber, and non-member, A. M. Goddard.—Valley: J. Douglas, J. A. MacBoyker, and non-member, J. Pautze.—Walla Walla: W. R. O'Rourke and F. C. Scott.—Wenatchee: Wells, Wade Co. and R. L. Cole.—Yakima: C. V. Lechnitz, G. R. Bickle, and non-member, Martin Jonhson.

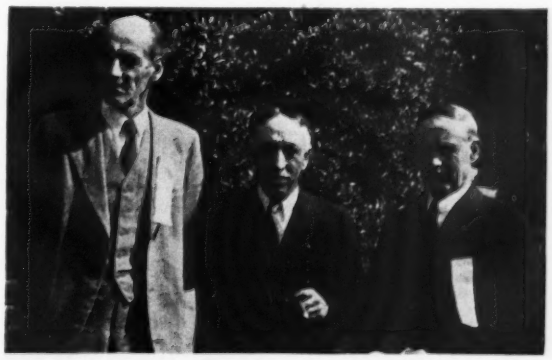
OREGON SECRETARY ADDRESSES CONVENTION

President James H. Hall presided and called the convention to order. Vice-President J. Aschenbrenner and Secretary Walter J. Widmer, both of the Oregon State Association of Master Plumbers, were in attendance, and upon request Secretary Widmer read a communication which he had written for the Oregon Association and sent to National President Robert J. Barrett concerning the Oregon State Plumbing Code and the troubles resulting from sales by "direct to you" and mail order houses to owners and others, ignorant of the laws and sanitary requirements, who would undertake to make plumbing installations.

Secretary B. M. Richards' report was read by Alfred James. It mentioned the interesting and uncommon events of an unusual year in the Association's history and referred to the large amount of work required of the officers, and it praised President Hall and Vice-President Spangler for their continuous activities and tireless efforts in behalf of the Association. The report also referred to the small membership of the Association last year, when the total membership was only 102 and was represented by 34 accredited delegates at the 1933 convention, while this year's convention was attended by 71 accredited delegates, representing a membership of 212.

NRA STATE ADMINISTRATOR TALKS ON RECOVERY

James E. Bradford, NRA Administrator for the State of Washington was introduced by President Hall. He delivered a very interesting and instructive address on the Code of Fair Competition for the Construction Industry of which the plumbing division is a part. Referring to the campaign against the depression, he said: "The results of this cam-



The New Officers of the Washington State Association of Master Plumbers, Left to Right: Vice President L. N. Hein, President E. G. Spangler and Secretary-Treasurer B. M. Richards

paign have been truly marvelous. The economic and social life of the nation has materially improved. National figures show more than five and one-half million people reemployed in all lines of industry since 1933. The American Federation of Labor estimates the un-employment total this summer at 10,000,000, and the best newspaper estimates are set at 8,000,000. Is our country safe with something like 9,000,000 people out of work? I say, we have made marked progress this first year, but so far we have only had a skirmish with the enemy. The real battle is ahead. It is the duty of all of us to support the President. The recovery laws of this country now in effect have been approved by great majorities. I urge you to consider the new deal carefully. It means the end of the chiseler, the price cutter and the man of unfair practice. They must co-operate or lose their business. I urge you to build up your trade association. The government is backing trade associations 100 per cent, and President Roosevelt is strongly in favor of their principles and practices. There are now 425 codes and they are codes of fair competition. The plumbing contracting code is working for you, and you should be working for it. I look upon any man who fights these code principles as a slacker. We are all in the same boat in the stream and must pull and bale together.

"All engaged in the plumbing industry are under the NRA plumbing code, whether or not they are members of your association, and the penalties for violation are both fine and imprisonment. This code is the salvation of your industry, and I want to see you get your industry signed up in your association 100 per cent. All members of the trade must bear the expense of code administration, whether or not they are members of the trade association."

The next speaker was Dr. E. R. Coffee, health and sanitation commissioner of the State of Washington. In his address on "Sanitation" he referred to the important position held by the plumber in the progress of civilization from the days of the hanging gardens of Babylon and the construction of the Roman aqueduct until the present time. "The plumbers form the first line of defense against the enemies of health lurking in our water supply, the market place, the air in our homes and elsewhere. With the physician he shares the important responsibility for the health and physical comfort of the people."

Dr. Coffee condemned the plumbing trickster as a very dangerous and troublesome man, and he considered the "handy-man" or owner, who attempts to do plumbing, a menace to health and safety.

Next on the program were the reports of the credential committee and of the officers of the local associations.

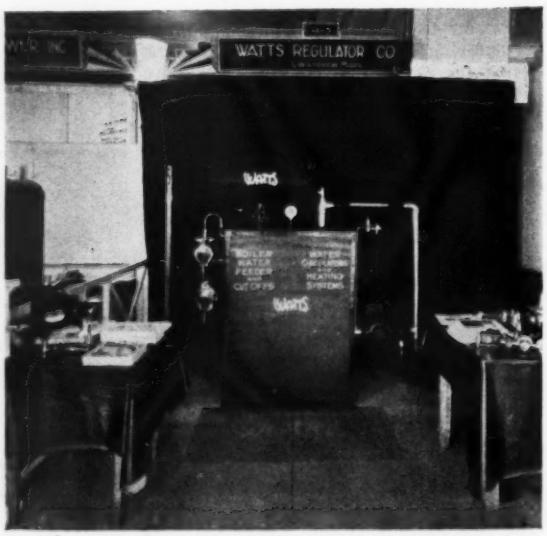
Phillip Goss, a member of the American Society of Sanitary Engineering, delivered a very instructive address on "Domestic Water Supply and Sewage Disposal." Mr. Goss has made a special study of the Amebic Dysentery Epidemic, and he explained how the water supply to fixtures below outlets or overflows might under certain conditions become contaminated and spread disease. He called attention to the fact that "sewer gas of very poisonous nature is not always odorous and therefore not quickly detected by the layman or even by the physician not familiar with the symptoms it produces. The result is that much harm may be done to health and fatalities may occur, before the cause is discovered, unless a competent plumber is called in time. Since the qualified plumber not only knows how to prevent such dangerous conditions but also how to detect their presence and remove the cause, he is becoming more and more the ally of the physician and held in increasingly higher esteem by the medical profession and all who are interested in better health of the community, including life insurance companies."

THE ANNUAL BANQUET

The officers, delegates, guests and ladies enjoyed an elaborate banquet on Friday evening. The banquet was interspersed with splendid entertainment by Bremerton talent, for which the wives and daughters of the local association members received well-deserved thanks.

Officers of Local Associations Recently Elected

AMSTERDAM, N. Y.—The Master Plumbers' Association of Amsterdam: President, August Keller; vice president, Sidney Griffiths; secretary, Edward E. Starke, and treasurer, Louis Altorio.



Booth of the Watts Regulator Company of Lawrence, Mass., at the 1934 Oil Burner Show in Philadelphia

BRIDGEPORT, CONN.—Bridgeport Master Plumbers Association, Inc.: President, Joseph F. Mongrain; vice president, B. Eichinger; secretary, R. T. Rock, 1188 Main Street; treasurer, Herbert F. Stenstream.

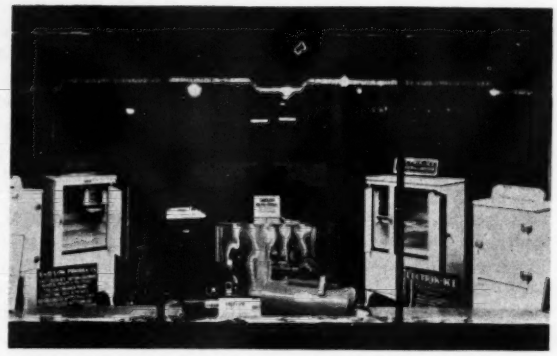
BUFFALO, N. Y.—The Master Plumbers' Association of Buffalo: President, William Ludlow; vice president, Julius G. Irr; secretary, Wm. G. Maurer; treasurer, William A. Keller; directors: Christ H. Brenner; Henry J. Ritter and Fred Yuhl.

DES MOINES, IOWA.—Des Moines Retail Pumbers Association: President, C. H. Potthoff; vice president, Emory Goff; secretary, E. J. Heger, and treasurer, W. H. Nunamaker.

ELIZABETH, N. J.—The Master Plumbers, Sheet Metal Workers and Steam Fitters Association of Elizabeth and Vicinity: President, H. A. Rath; vice president, Leslie R. Tichenor; treasurer, George L. Bird; secretary. J. W. Frank, 801 South Street, Elizabeth, and sergeant-at-arms, Otto Wollenberg, Jr.

EVANSTON, ILL.—North Shore Master Plumbers' Association: President, W. H. Gregg; vice president, A. J. Butow; secretary, E. W. Coel, and treasurer, George Moore, all of Evanston.

LOWELL, MASS.—Lowell Master Plumbers' Association: President, Edward T. O'Day; vice president, Charles E. Bourrett; secretary, George A. Stewart; treasurer, Bertram Neild.



Products of the Uniflow Manufacturing Co. of Erie, Pa., Exhibited in the Window of the Erie Lighting Company in That City

HAZLETON, PA.—The Master Plumbers' Association of Hazleton: President, C. H. Sherry; vice president, Norman Walck; treasurer, Christ Henderschedt, and secretary, Norbert Corrigan.

KEARNY, N. J.—West Hudson Association of Master Plumbers: President, Elmer Branch, Kearny; vice president, Joseph Emery, North Arlington; secretary, A. O. Bornemann, Kearny, 30th year; treasurer, Joseph Roujon, Kearny.

LOUISVILLE, KY.—Louisville Master Plumbers' Association: President, Albert D. Burger; vice president; secretary and treasurer, O. H. Mitzlaff.

MONTCLAIR, N. J.—Master Plumbers' Association of Montclair, Bloomfield, Verona and Vicinity: President, Henry J. Williamson, Montclair; vice president, Henry Weingartner, Verona; secretary, Chas. J. Samuel, Montclair; treasurer Paul Zeim, Bloomfield.

NEW BRITAIN, CONN.—New Britain Master Plumbers Association, Inc.: President, Juddie L. Landgren, Worthington Ridge, Berlin, Conn.; vice president, Frederick Walker; secretary, William R. Fenn; treasurer, Louis Croll.

NEWTONVILLE, MASS.—The Master Plumbers' Association of Newton, Mass., and Vicinity, Inc.: President, Charles D. Kieser, Newton Highlands; vice president, John J. Burke, Newton Centre; secretary, L. J. Hickman, Newtonville; treasurer, Louis Corcoran.

PALATINE, ILL.—The Tri-County Master Plumbers' Association: President, Rudolph Kocher, Sr., Barrington, Ill.; vice president, David Nichols, Woodstock, Ill.; secretary and treasurer, W. A. Danielsen, Palatine, Ill.

PORTSMOUTH, VA.—Portsmouth Master Plumbers' Assoation: President, A. L. Wright; vice president, J. A. Rattie; secretary, W. L. Bennett; treasurer, J. P. Harrell.

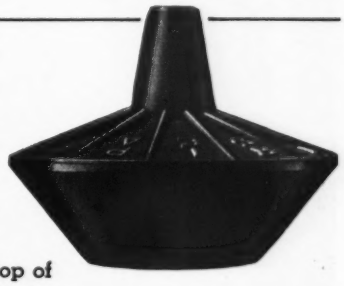
SALEM, MASS.—The North Shore Master Plumbers' Association: President, Maurice R. Sheehan, Salem; vice president, Thomas F. Kelaher, Marblehead; secretary, James H. Trow, Salem; treasurer, John F. Cabeen, Salem.

SAN FRANCISCO, CALIF.—The Master Plumbers' Association of San Francisco, Inc.: President, Jack Camp; vice president, V. J. Peterson; secretary, J. J. McLeod, 1246 Golden Gate Avenue, and treasurer, Charles Noury.

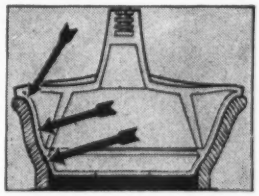
SCHNECTADY, N. Y.—Schenectady Master Plumbers Association: President, Frank V. D. Forest; vice president, John F. Sims; secretary, Wm. D. Atkins, and treasurer, Joseph V. Marlow.

TOMPKINSVILLE, N. Y. —Association of Master Plumbers of Borough of Richmond: President, William H. Ahrens, New Dorp; vice president, Phillip Beyer, Stapleton; treasurer, John Missall, Port Richmond; recording secretary, James J. Brady, 76 Waldron Avenue, Tompkinsville; financial secretary, George F. Morris, Annadale; sergeant-at-arms, George Missall, Port Richmond.

FORM PAYS
WITH PREMIUM PERFORMANCE



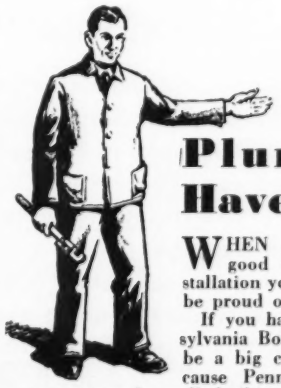
The FORM of the TRIPLE SEAL Tank Ball is largely responsible for its phenomenal performance. Fitting well inside the valve seat—not merely on top of it—the TRIPLE SEAL provides three airtight, watertight seals. Guaranteed leakproof for four full years.



Save 30c a dozen by buying the TRIPLE SEAL in 3-dozen lots. Sold only through jobbers.

RADIATOR SPECIALTY COMPANY
CHARLOTTE, N. C.
Los Angeles, Cal. Toronto, Can.
Exports: 280 Broadway, New York City

TRIPLE SEAL TANK BALL



Sure! Plumbers Have Pride!

WHEN you've made a good range boiler installation you have a right to be proud of your work.

If you have used a Pennsylvania Boiler, the job will be a big credit to you, because Pennsylvania Boilers are extremely well built—staunch, strong—galvanized inside and outside. All bushings have clean, deep threads that make for good pipe fittings.

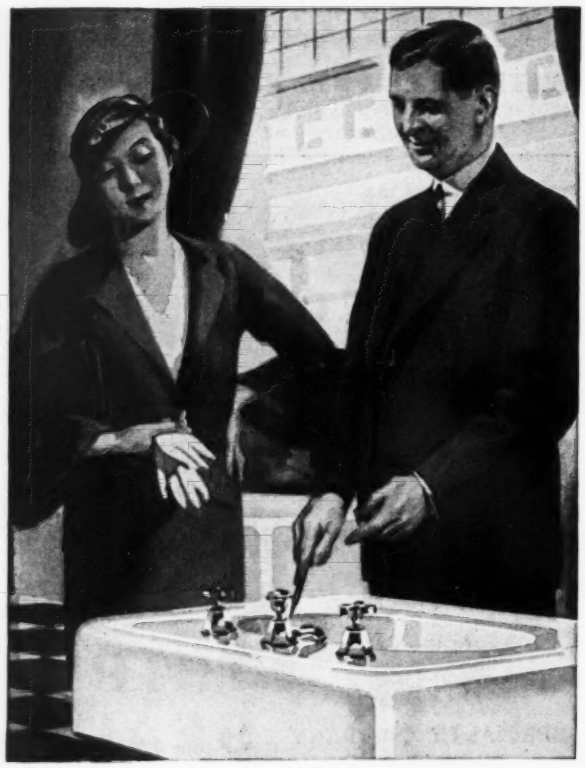
But aside from the quality angle, it's good policy, from the profit standpoint, to tie up with Pennsylvania Boilers.

Complete line of All Welded and Riveted and Welded Galvanized, and Everdur Copper Boilers.

More information is yours for the asking.

PENNSYLVANIA RANGE BOILER CO.
Established 1895
24th and Washington Ave., Philadelphia, Pa.

PENNSYLVANIA RANGE BOILERS



"You can keep this sink beautiful and new-looking by cleaning it only with OLD DUTCH . . . it's made with pure **'Seismotite'"**

Maintain your customers' good will and assure the greatest possible satisfaction from your merchandise by guarding against the destruction of its fine surface by ordinary gritty cleansers. Recommend Old Dutch exclusively. It doesn't scratch, and it polishes as it cleans porcelain, enamel and tile.

Old Dutch is made with pure "seismotite" (pronounced sis'-mo-tite), a scratchless cleaning and polishing material of volcanic origin. Seismotite particles are very fine, flaky and flat in shape . That's why Old Dutch doesn't scratch. It contains none of the chunky grit found in ordinary cleansers.

MAKE THIS TEST. *Sprinkle a little Old Dutch on the back of a plate and rub with a smooth coin. You'll neither feel nor hear the scratching of harsh, gritty particles because there are none in Old Dutch. Try the same test with other cleansers and notice the difference.*

RECOMMEND OLD DUTCH EVERY TIME

Doesn't

Scratch

TULSA, OKLA.—Tulsa Master Plumbers Association: President, E. L. Freeman; vice president, W. L. McCaskey; secretary-treasurer, C. D. Moore; trustees: A. Bailey, E. L. La Cour and Fred Hanson.

WASHINGTON, D. C.—The Master Plumbers Association of the District of Columbia: President, Arthur Snowden; first vice president, Hervey L. Lauder; second vice president, Thomas E. Clark; secretary, Frank Bentley, and treasurer, Wm. E. Miller.

WATERBURY, CONN.—The Waterbury Master Plumbers' Association: President, James Lowe; vice president, Albert Blanchard; treasurer, John Gill; recording secretary, F. A. Garrity, and financial secretary, Julius Reichenbach.

YOUNGSTOWN, OHIO.—The Mahoning Valley Master Plumbers' Association: President, Henry N. Boucherle; vice president, La Verne Struble; secretary and treasurer, Thomas W. Crogan.

GLOUCESTER CITY, N. J.—The Master Plumbers Association, Gloucester City: President, James Ackeroyd; vice president, William J. Mailley; secretary, Ellis Robb; treasurer, Henry Horn.

Plan Wisconsin Heating Meeting

The annual convention of the Heating and Piping Contractors Wisconsin Association will be held at Milwaukee, July 16, starting at 9 a. m. at the Elks Club. Officers of this association are: Lewis J. Eron, Wisconsin Rapids, president; Elmer Laudon, vice president; A. F. Bowers, secretary-treasurer, and Mich. Mueller, sergeant-at-arms, the latter three of Milwaukee. The directors are: R. R. Hughes, Racine; C. A. Hooper, Madison; George F. Reeke, Green Bay; C. P. Finke, Sheboygan; T. L. Ahern, Fond du Lac, and E. Biefeld, Watertown.

Oklahoma City Plumbers Picnic

The Oklahoma City, Okla., Association of Master Plumbers held its annual picnic on June 9 at Belle Isle Park. The picnic was arranged and supervised by a joint committee from the association and the women's auxiliary. Men, women and children thoroughly enjoyed the day. An excellent basket lunch was served at sundown.

North Shore Opens Golf Season

The North Shore (Ill.) Master Plumbers and Steamfitters Golf Association held its opening tournament of the season on Thursday, June 7, at the Wilmette Golf Club. H. A. Bergdahl is secretary and Ray Maxwell chairman.

Appropriations Voted Bundesen

The Chicago City Council Finance Committee has voted Dr. Herman N. Bundesen, president of the Board of Health, an emergency appropriation of $58,600 in the 1934 budget to guard against a recurrence of amebic dysentery of last summer. The appropriation will be used to engage one epidemiologist at $6,000 a year and 20 junior assistant sanitary engineers and epidemiologists at $2,640 a year. In his letter requesting the appropriation, Dr. Bundesen said: "Investigation of the causes of the amebic dysentery showed conclusively that a careful survey must be made at once of the water and sewage piping and the handling of ice and food in all hotels in this city to guard against a possible recurrence of the disease during the coming months when people will be coming from all parts of the country to visit the 1934 World's Fair.

WOMEN'S ACTIVITIES

By DOROTHY EDWARDS

Florida State Auxiliary Holds Successful Meeting

The Florida Division Women's Auxiliary held its tenth annual convention at the Hotel Thomas, Gainesville, Florida, on May 7 and 8. There were 36 members and two guests in attendance. Mrs. Lee Phillips, president, was in charge. J. W. Pate, Birmingham, Ala., National director, brought a message from the National Association. Mrs. T. H. Thompson, Mrs. W. E. McAndrew, Mrs. Foster R. Fanning, Mrs. Lee Sheffield and Mrs. V. C. Grant were speakers at the meeting. A report by Mrs. Lee Phillips showed an increase in membership of from 41 to 88. There are 10 auxiliaries. Mrs. W. E. McAndrew led a round table discussion on the National Educational Loan Fund for girls, and it was decided that $25.00 should be given to this fund. The sum of $5.00 was given to the P. T. A. of Gainesville, through the local auxiliary, for a milk fund. Memorial services were held for past National Director W. E. McAndrew of Florida and Past National President John J. Vogelpohl, Cincinnati, O.

D. A. Mayfield, president, brought greetings from the Master Plumbers' Association and thanked the ladies of the auxiliary for their cooperation.

Mrs. Lee Sheffield, Petersburg, was elected president of the state auxiliary, Mrs. B. Ginty, St. Augustine, first vice president; Mrs. J. E. H. Dorsett, Lakeland, second vice president; Mrs. C. V. Simpson, Gainesville, third vice president; Mrs. Chester Armstrong, Bradenton, secretary; Mrs. Charles Koegel, Jacksonville, treasurer, and Mrs. V. C. Grant, Daytona, historian.

Retiring President Mrs. Phillips, and newly elected President Mrs. Lee Sheffield were presented gifts of lovely flowers at the close of the meeting.

J. W. Pate, national director, presided at the dinner-dance. Corsages for the ladies and boutonniers for the men were provided by the Gainesville auxiliary. A donation of lovely lilies was made by Mrs. C. C. Voyle.

At the recent annual convention of the Women's Auxiliary to the National Association of Master Plumbers in Washington, D. C.—From left to right in top row: Mr. and Mrs. Samuel F. Wilson, Newark, N. J., past president N. A. M. P.; Mrs. Howard Baker, Toledo, O., state auxiliary president; Mrs. Henry Bartosch, St. Louis, Mo., president of state auxiliary.—Bottom row: Mrs. L. P. Markowski, Mrs. George Hill, Miss Helen Bangs, Miss Clara Chays, Miss Esther Schmeisser, Mrs. Robert Liss, president of National Women's Auxiliary, and Mrs. H. P. Reger, all of Chicago

Women Entertain At Pennsylvania Convention

The ladies in attendance at the Pennsylvania Master Plumbers State Convention were finely entertained by the ladies of Uniontown, where the convention was held on June 18-20.

June 18 they attended a reception in the White Swan Hotel. June 19 they were taken on an auto tour to points of interest about Uniontown and had luncheon at the Summit Hotel. In the evening a card party was held at the White Swan, during which they were addressed by National President Robt. J. Barrett, who urged them to organize auxiliaries in their various cities.

Mrs. Arch P. Fleming and Mrs. T. Guy Hawkins, visitors from Fairmont, W. Va., which state has a Ladies Auxiliary, told of the work they were doing in West Virginia.

The ladies were also taken on a trip through the plant of the Richmond Radiator Co.

On June 20, the ladies were entertained at a theater party, and in the evening joined with the men folks at the annual banquet and ball of the association in the White Swan Hotel.

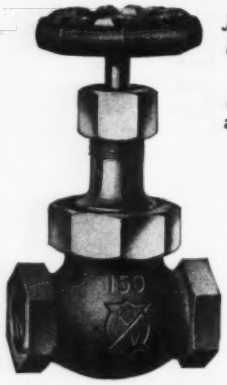
Mrs. S. E. Williams of Uniontown was general chairlady of the women's activities, and was assisted by the ladies of Uniontown, Connellsville, Brownsville and Washington, Pa.

Milwaukee Auxiliary Assists Plumber's Family in Need

The Milwaukee, Wis., Women's Auxiliary sponsored a card party at the home of Mrs. J. J. Mueller for the benefit of a needy master plumber's family. The party was well attended. Prizes were furnished by the members of the Milwaukee group. There were seven tables and two door prizes. A total sum of $15 was realized.

Mrs. George Stoehr recently opened her home to members and friends for a benefit card party to replenish the treasury. Mrs. Stoehr's recreation room was filled to capacity.

A heavy standard bronze globe valve



for better service with lower maintenance cost

Some of the special features of this new Kennedy Valve are:

- Malleable iron union bonnet ring and packing nut for greater strength and toughness.
- Cadmium plating on union ring and packing nut prevents rusting and helps to lubricate the threads.
- Slip-on disc holder locks itself on stem at wide open position, and releases at half-turn of stem.
- Four guide prongs on disc holder to prevent binding during operation.
- Special machined low-friction bearing surface between stem head and disc holder.
- Raised seat in body unusually high for longer disc life.
- All operating parts interchangeable.
- Valves may be repacked under pressure.
- Non-heating, comfortable grip handwheel.

Kennedy Fig. 89

With Composition Renewable Disc for
150-lb. steam pressure
250-lb. steam pressure

These valves are obtainable from your distributor.

The Kennedy Valve Mfg. Co., Elmira, N. Y.

KENNEDY

Valves - Pipe Fittings - Fire Hydrants

MADE FOR LONG RUGGED SERVICE

Boiler Tube Cleaners, Flue Brushes, Wire Heater Brushes, Handy Cleaner Brushes, Fire Brooms, Track Brooms.

Tempered Steel

The Worcester line is complete. Catalog gladly sent upon request.

WORCESTER BRUSH and SCRAPER CO.

10 AUSTIN STREET :: WORCESTER, MASS.

Visited Fairmont, W. Va., on Return from Convention

While returning home from the national convention, Mrs. Robert Liss, national president, Mr. and Mrs. Edward Frank and son Russell stopped at Fairmont, W. Va. Mrs. Fleming and Mrs. Hawkins, state president, both of that city insisted upon that they should visit Fairmont. Mrs. Fleming invited all the plumbers and their wives in Fairmont to be present at a most delicious dinner, served at her home Saturday evening. All the plumbers wives assisted in the affair. Later in the evening, everyone enjoyed another real convention.

Some of the ladies attending the 39th annual convention of the Washington State Association of Master Plumbers held recently at Bremerton, Wash.

Holds Successful Charity Card Party

The Ladies' Auxiliary of the Master Plumbers' Association of Queens, N. Y., held its regular meeting on Wednesday, June 5, at the K. of C. Hall, Jamaica, Long Island, with a good attendance. The charity card party which this auxiliary recently gave for the benefit of the welfare camps, sponsored by Mr. and Mrs. Matthew J. Kennedy, was most successful.

Cincinnati Auxiliary Entertains Mrs. Robt. Liss

The Cincinnati, O., Women's Auxiliary held its June 5 meeting at the Netherland Plaza Hotel in that city. Mrs. Robert Liss, Chicago, national president was the guest of honor, having stopped over in Cincinnati on her return trip from the national convention. Her talk to the ladies at the meeting was very pleasing and instructive. Every member of the auxiliary was present and enjoyed luncheon in the beautiful Plaza dining room. Later they retired to one of the parlors to hold their meeting which was followed by cards. Mrs. Liss proved to be quite an expert at bridge and carried off one of the prizes. The ladies regretted very much seeing Mrs. Liss depart after a stay of only two days.

Milwaukee Auxiliary Gives Surprise Birthday Party

Mrs. Rose Friend was honored with a surprise birthday party on June 11th, held in conjunction with the June meeting of the Milwaukee auxiliary. There was an unusually large attendance, including State President, Mrs. L. Pugh, of Racine. Mrs. F. C. Kuetemeyer, local member, who was elected vice-president of the National Auxiliary, was also honored at this meeting. A beautifully decorated birthday cake was presented to Mrs. Friend by Mrs. Walter Dusold, Milwaukee auxiliary, president. Refreshments were served. Mrs. Friend responded in her usual charming manner. Her spirit and attitude to the Women's Auxiliary serves as an inspiration to each and every member.

Wisconsin Auxiliary Holds Card Party

The Wisconsin Women's Auxiliary was entertained at a luncheon and card party at the General Electric Company's show rooms in Milwaukee. There were 90 ladies in attendance. Members of the auxiliary donated the prizes. The purpose of the party was to increase the balance in the treasury. Another card party is planned for this fall.

New Contractors and Incorporations

Winona, Minn.—Frank O'Laughlin has opened a plumbing and heating business at 462 Winona Street.

Tujunga, Calif.—E. R. Peters, Roscoe Chase and H. D. Chase have organized the Heart Plumbing Co. and have started in business at 7635 Foothill Boulevard.

Kirkland, Mo.—The Wanous Plumbing & Heating Company has just been incorporated by Joseph Wanous and William Wanous.

Des Moines, Iowa.—E. R. Proctor and Bert Running have formed a partnership under the name of Proctor & Running and have opened a plumbing and heating business at 216 Third Street.

Seattle, Wash.—Henry Ingwerson has opened a plumbing and heating business at 5435 Ballard Avenue.

San Francisco, Calif.—Delaney & Crohan have opened a plumbing and heating business at 2089 Fifteenth Street.

Los Angeles, Calif.—Dennis M. McMahon and H. J. Stich have formed the Dennis M. McMahon Plumbing Company and have started in business at 3423 Glendale Boulevard.

New Haven, Conn.—Meadow Plumbing & Heating Co., Inc., has been incorporated with a capital of $50,000, to conduct a plumbing and heating contracting business. The incorporators are Joseph Meadow, 567 Grand Avenue; M. H. Meadow and Shandel Meadow.

Lewiston, Me.—The plumbing and heating firm of J. L. Sasseville & Sons, 297 Lisbon Street, has been incorporated with a capital of $10,000 under the name of J. L. Sasseville & Sons, Inc. The officers are: President, Sylvio Sasseville; treasurer, Louis P. Sasseville, and secretary, Sarto Sasseville. The directors are: Sylvia Sasseville, Sarto Sasseville and Louis P. Sasseville.

Business Changes

San Francisco, Calif.—J. Irving & Co. have moved their plumbing and heating business from 606 Natoma Street to 1121 Mission Street.

Philadelphia, Pa.—Henry Ford has moved his plumbing and heating establishment from 3514 York Road to 1230 West Tioga Street.

San Francisco, Calif.—A. E. Hennessey has moved his plumbing and heating business from 1109 Mission Street to 273 Minna Street.

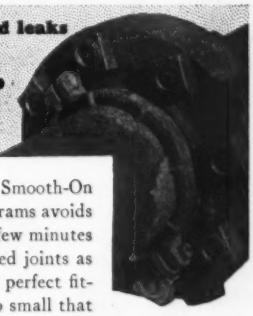
Schenectady, N. Y.—J. V. Vrooman's Sons' Company has moved its plumbing and heating business from 152 Erie Boulevard to 226 South Ferry Street. This business was started in 1854 by J. V. Vrooman, and the present owner, his son, Wm. C. Vrooman, has been connected with the business for more than 60 years.

The way to stop pipe-thread leaks

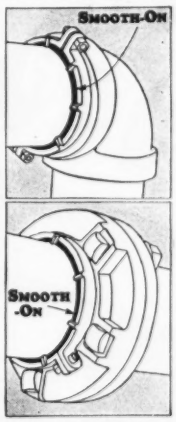
SMOOTH-ON No. 1 in a

SMOOTH-ON CLAMP

No interference with the bolts and nuts of a flanged joint



Applying Smooth-On No. 1 in a Smooth-On Clamp as indicated in the diagrams avoids disconnecting the line and with a few minutes easy work stops leakage at threaded joints as completely as putting in new and perfect fittings—and the finished repair is so small that it is hardly noticeable. If the pipe is covered, the repair cannot be detected at all. Smooth-On Clamps should be stocked for all sizes of piping in the plant.



The Smooth-On Handbook is filled with instructions, diagrams and helpful hints on at least 200 uses of Smooth-On in routine and emergency repair work. Your repair kit is not complete without a small supply of Smooth-On No. 1 and a copy of this instruction book, which will be sent free on request.

Get Smooth-On Clamps in pipe sizes of from ⅜-inch to 12-inch and Smooth-On No. 1 in 1-lb. or 5-lb. can or 25-lb. or 100-lb. keg. If your dealer can't supply you, write directly to us.

SMOOTH-ON MFG. CO., DEPT. 12,
570 Communipaw Ave., Jersey City, N. J.

quality fittings • inspected by experts

DEVLIN fittings FRETZ nipples

● Eagle-eyed inspectors minutely examine each casting after it has been rough-cleaned in the tumbling barrel. Broken castings are thrown out, burrs of metal are cleaned off. Any unit with the slightest defect is removed from the production line. Carefulness in every stage of manufacture keeps Devlin Fittings of one uniform high standard.

THOMAS DEVLIN MANUFACTURING CO., INC.
BURLINGTON, N. J.

Manufacturers of a complete line of Devlin Fittings and Fretz Nipples

Next advertisement—"The Galvanizing Process." Watch for it. Save this series of advertisements, they tell a complete and valuable story. If you do not have preceding advertisements, write us.

NEW PEERLESS CORK-LOCK BUSH

TAPPING Peerless SYSTEMS

59% BETTER

The teeth of this new bush (patent applied for) lie flush on the inside with the tap hole. They grip the bulge of the cork but do not affect in any way tapping the cork toward the inside.

. . . says the DETROIT TESTING LABORATORY

REPORT NO. 4631-C-8

The corks of three sizes were soaked in water over night and then inserted with a standard corking tool. Hydraulic pressure was applied until the corks blew out.

● NEW YORK SALES OFFICE
717 General Motors Building ●

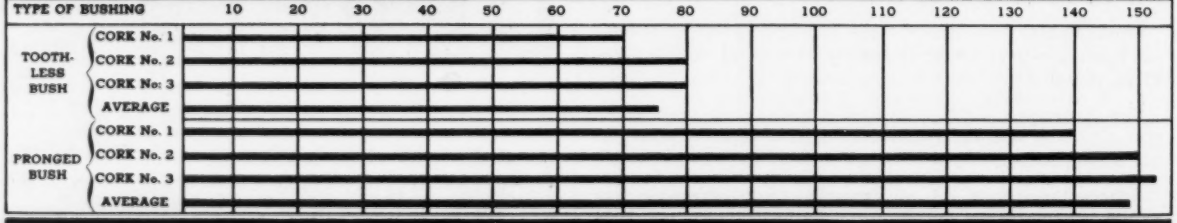
Here is the sensational yet simple improvement in Peerless Bushes which has shown such remarkable results . . . It gives Brewers and Dispensers a large, extra margin of protection for their beer at no extra cost . . . Here are the results of these extensive tests:

New bush tested with No. 9 cork = 33% better
New bush tested with No. 10 cork = 49% better
New bush tested with No. 11 cork = 94% better

Write for our new folder describing these tests in detail.

This is what happened to a No. 11 cork

PRESSURE AT WHICH CORK WAS DISLODGED LBS. PER SQ. IN.



American Tap Bush Company, Detroit, Mich. Manufacturers of Beer handling equipment for over 38 years and makers of the famous Peerless Portable Beer Coolers and Fountains.

BEER *and* BAR EQUIPMENT

What Constitutes Adequate Sanitary Facilities?

ALTHOUGH there are all types of drinking places and all types of sanitary facilities, or lack of facilities, are represented, it will be conceded generally that the progress of the last few years has brought about a public demand for high standards wherever the public is served. This has been reflected both in the appearance and the conveniences offered in many of the new drinking places. The illustration at the bottom of this page serves as an example. Here in the Lycoming Hotel at Williamsport, Pa. just as in many other similarly well appointed drinking places, it is evident that the public's requirements for adequate facilities are met.

Fig. 1—Here is a view of the bar in the Lycoming hotel at Williamsport, Pa. Such an installation requires adequate facilities.

This leads to the question of just what are adequate facilities. When a place for the serving of alcoholic beverages is planned, very definite ideas must be kept in mind if adequate facilities are to result. Probably experience is the best basis. Certainly, it will be recognized that there are so many variables involved that the subject cannot be reduced to an absolutely exact set of rules. However, experience has been such as to

make it possible to outline quite positive requirements which may require modification to fit specific cases.

Sanitary requirements which have been worked out for the State of Wisconsin for new and existing buildings where beer, wines and alcoholic beverages are served on the premises, should serve anyone faced with the problem as a very definite starting point. They are reproduced in the following as being abstracted from the Wisconsin State Building Code.

In places where not more than one hundred persons are accommodated, separate toilet rooms for males and females shall be provided and maintained in connection with all places where stimulating drinks, such as beer, wines and similar alcoholic beverages, are served for consumption on the premises, except in dining rooms, restaurants and similar places where the serving of such drinks is only incidental to the regular food service, toilet fixtures shall be provided in connection with the area served, for the sex (or sexes) served as follows:

One water-closet for every 40 females, or fraction; one water-closet for every 75 males, or fraction, and where there are more than 25 males accommodated there shall be one urinal for every 50 males, or fraction in excess of 25.

The number of persons herein refers to the number of persons that may be accommodated at the same time, and shall be determined by allowing 15 sq. ft. per person of floor area not otherwise occupied, as for assembly halls.

In toilet rooms (required above) used by males, all water-closets shall have projecting lip (or so-called elongated pattern) and open front self-arising counterweighted seat without cover. In toilet rooms used by females, all water-closets shall have open front seat, without cover. All urinals shall be of the individual type.

Where toilet rooms used by males and females adjoin, the wall between such toilet rooms, if of wood studding with lath and plaster, shall be covered on both sides with metal lath and plaster.

In the case of toilet facilities required (in dance halls and similar places where more than 100 persons are accommodated) the following shall be in effect. Separate toilet rooms shall be provided for males and females. In dance halls there shall be provided one water-closet for each 100 females or fraction, one urinal for each 150 males or fraction and one water-closet for each 300 males or fraction, assuming the audience to be equally divided between males and females.

Where stimulating drinks, such as beer, wines and similar alcoholic beverages, are served for consumption on the premises, there shall be provided one water-closet for every 40 females or fraction, one water-closet for every 75 males, or fraction, and one urinal for every 50 males, or fraction; except that where the capacity in such places exceeds 300 persons, the ratio of number of fixtures to number of persons accommodated in excess of 300 need be only one-half of the above.

Drinking Water. Sufficient pure drinking water piped from mains or in sanitary containers shall be provided in connection with every public building under this classification and separate drinking fountains, or individiual drinking cups, of a type approved by the State Board of Health shall be provided in connection therewith, except in places where food or drink is served, and except in public buildings where normally not more than ten patrons are expected to be on the premises at the same time. Drinking fountains shall not be placed in toilet rooms.

In every such building or place, wash bowls shall be provided in connection with toilet rooms, one for every two water-closets and urinals, or fraction. Clean, individual cloth or paper towels and soap shall be provided in connection with every lavatory installation. The installation of a towel for common use or the use of any such towel is not permissible.

In existing buildings, coming under the classification of toilet room facilities in existing buildings, all new toilet rooms, remodeling of existing ones and new plumbing fixture installations shall conform with these requirements. Existing plumbing fixtures (water closets, urinals and wash basins) which are in serviceable, in good repair and sahitary condition will be permitted to be used under these orders.

A Question Asked by a Reader

To the Editor:

Reports have been coming to us constantly in reference to the stomach distress experienced when drinking beer at temperatures under 45 deg. Fahr. We believe the claim is, that when beer is consumed at a lower temperature, the gas is retained and then given off within the system due to body heat.

Further, we believe there are some claims made that beer is flat and not as tasty when consumed at these lower temperatures.

We are particularly interested in this phase of consumer reaction because of questions which are continually being asked of us by our customers whose jobs we have installed.

If you are familiar with this condition and can furnish us clippings or any articles that have been published in reference to the desirability of serving beer at 45 deg. Fahr. or above, it will be most helpful.

Indiana. F. A. C.

To the Reader:

We have published a considerable amount of information concerning the proper temperatures at which beer should be served.

Another authoritative check on this matter was secured from the Wahl-Henius Institute in Chicago. They agree that 45 deg. Fahr. is the correct temperature at which beer should be served. Mr. Dupont, one of the institute's teaching faculty, says that when beer is served colder than this, the shock to the palate is so great that a person is unable to distinguish the flavor of the beer and, of course, when it is served at much higher temperatures, it is not palatable.

He says that the stomach distress, which will follow the drinking of beer that is too cold, is the same as one would experience in drinking any beverage that is too cold.

90% of all difficulty with beer— is from the keg to the glass

Headache **Dysentery** **Heartburn** **Nausea**

Removed from beer coils, by Universal Method after being cleaned the old way. Chain Cafeteria Manhattan.

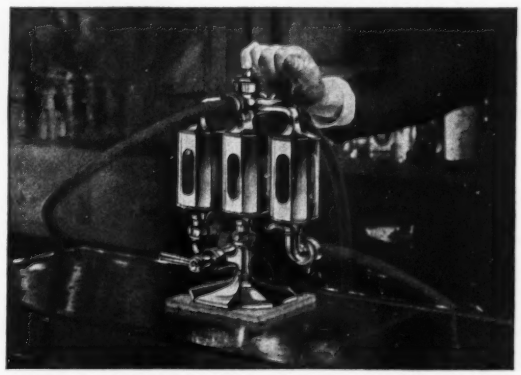
Taken from beer coil by Universal Method in cafe Hoboken, New Jersey. Proprietor complained about the beer.

Out of beer coils cleaned the old way then removed by Universal Method. Dispenser Philadelphia.

Universal took this from beer coils in Brooklyn Hotel that had been cleaned the old way.

HOW THE UNIVERSAL METHOD OPERATES. With the ordinary water pressure, small rock crystal pearls, especially adapted, are forced through the coils.

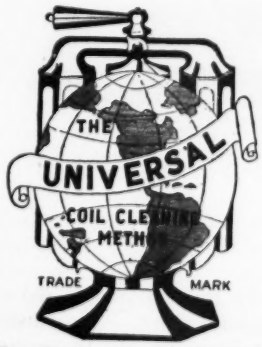
The whirling motion of the pearls plus the water pressure has a scouring action that removes the accumulated slime and muck. Half inch sponges are then rotated through the lines which have a swabbing or polishing effect, removing all loosened material from the crust or Beer Stone leaving it clean and free from foreign substances.



The New Way, Universal
NO ACIDS—NO CHEMICALS—NO STEAM

Fine mesh screens in the top of each cylinder head catch the pearls and sponges, allowing the dirt and slime to pass through to the drain.

Pit holes and cavities are removed. The surface is smooth and slick making it difficult for yeast deposits to accumulate.



The Brewmaster's Friend

WRITE TODAY

Let us show you how plumbers can make money with Universal.

BEER UTILITIES CORP.
OF AMERICA
53 East 25th St.
New York City

DE-4

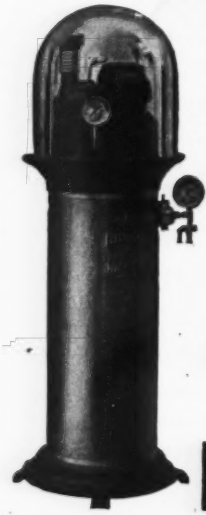
Beer Utilities Corp. of America
53 East 25 St., New York City
Please send details of the Universal Method of Cleaning Beer Coils.

Name .....

Address .....

MAKE REAL MONEY
Selling the
JANETTE BEER PUMP
The Standard for 25 Years

WE WILL ASSIST YOU
with a
TIME PAYMENT PLAN



Which enables you to sell on a small down payment with convenient monthly terms on the balance and

YOU GET YOUR MONEY NOW

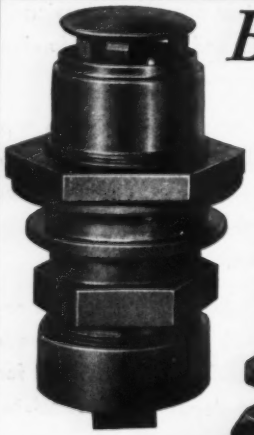
If you have a reputable firm with a good financial standing, and cover the tavern trade, there may be an excellent chance for you to act as our distributor with an

EXCLUSIVE TERRITORY

Write or Wire to

JANETTE MANUFACTURING COMPANY
556-58 West Monroe Street
Chicago, Illinois

Ask any Old Timer about JANETTE Beer Pumps



BREWERY FITTINGS tried AND proven

MADE of the finest bronze, Rundle - Spence Brewery Fittings are accurately machined, carefully inspected and thoroughly tested before shipment. In actual service Rundle-Spence Fittings have been proven more than equal to their respective tasks.

Above: Filler Spring Valve

Below: Fermenting Spring Valve

FOR sixty-two years the Rundle-Spence organization has devoted its facilities to producing the finest grade of brass goods . . . your assurance that every item in its line must be good.

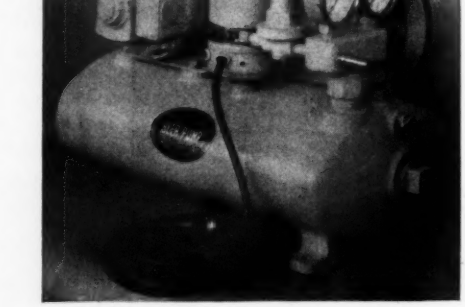
Send for Catalog on the complete line of Rundle-Spence Brewery Fittings and Beer Dispensing Equipment.

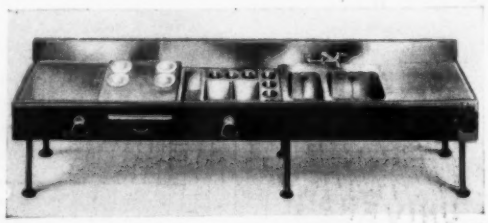
RUNDLE-SPENCE MFG. COMPANY
445 NORTH 4TH ST.
MILWAUKEE, WIS.
62 Years of Brass Manufacturing Experience.

Products for the Beer and Bar Equipment Dealer

Cabinet Type Beer Pump

The beer pump unit shown is designed to take care of the needs of the tavern or other dispensary where space may be limited. It offers, the makers, say, compactness with ample capacity, dependability, convenience (can be operated from a light socket), no vibration, quietness, and automatically controlled. A companion pump of the vertical type has larger tank for use where extra capacity is required for short periods. Floor space required, 12 by 22 in. Height 14½ in. May be had for AC or DC. Capacity for six taps. Made by Ingersoll, Rand Company, 11 Broadway, New York, N. Y.





All Steel Bar Interiors

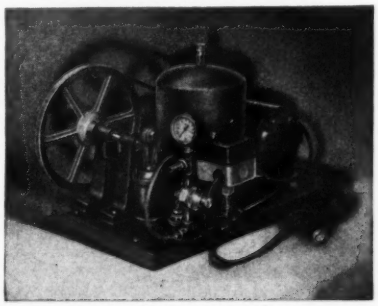
The unit pictured shows the fabrication of a piece of equipment to meet specific requirements. This method of manufacturing stock bar interiors, say the makers,

Readers will find in this section information and news regarding products for use in making their beer dispensing sales and installations

makes it possible to arrange the different service units where desired. The construction is all steel with electrically welded angle steel frame, reinforced. Have stainless steel working surface, 11½ in. aprons. Finished in crackled enamel. Sinks are reinforced with heavy channels, with extra large overflow castings. Press formed, rounded corners make cleaning easy. Manufacturer: Russ Soda Fountain Co., Cleveland, Ohio.

An Oil-Less Beer Pump

The beer pump illustrated has an all-brass compressor, V-belt drive and is automatic. Quarter-horse-power motor may be piped to outside air if desired. Comes



complete, ready to attach, with hose and electrical connections. Makers say it is built expressly to dispense clean, smooth, creamy beer. No oil. Also that it is unconditionally guaranteed for one year. The pump is made by O. K. Products Co., 105 Johnson St., Newark, N. J.

And Now— Bars of Glass Block

These columns have carried descriptions of bars of various materials, faced with other various materials. The picture shows one made of glass blocks. "What the photograph does not show," says the maker, truly, "is the interesting and decorative lighting effect that is secured by placing electric lights behind the bar front or by allowing the lights of the room to reflect from the

Write for Circular of the "GRAND" Line Of Picnic Pumps and Taps

No. 2541 — Complete as shown.
No. 2542 — Pump with New York Tap.
No. 2540 — Pump less Tap.
Just what you have been wanting. A sturdy picnic pump complete with Bock Tap and easy operating Pull Handle Ground Key Faucet.

No. 2520 — Complete as shown.
A complete picnic tapping unit where the air enters the barrel through the tap and allows a full flow of beer through the tap rod.
No. 2521—Ditto less Tap.
No. 2522—Ditto with New York Tap.

No. 2432—New Style Grand Tap.
For use with wood and steel barrels, featuring a large wing nut for tightening so the tap can be securely fastened to the barrel by hand without the use of tools.

No. 2500 — Complete as shown but less pump.
No. 2502—Tap Rod only ⅛ barrel.
A perfect unit for anyone who has an automobile pump handy—easy working Pull Handle Faucet with a sturdy heavily tinned Tap Rod with a heavy boss for driving rod into the barrel. (Pumps not furnished.)

No. 2433 — New Style Grand Bock Tap.
For use with picnic pumps, featuring a large wing nut for tightening so the tap can be securely fastened to the barrel by hand without the use of tools.

Grand Haven Brass Foundry
GRAND HAVEN, MICHIGAN

CURTIS BEER EQUIPMENT

40 Year Compressor Building Experience. *Easy to Sell.*

Curtis Beer Pumps

DRY CRANKCASE—CLEAN PURE AIR. Compact (vertical or horizontal tanks). Precision made. Air strainer on intake. Quiet, rubber mounted. V-belt drive. Wick-oiling. Uses Po-Ri-Co for lubrication—won't contaminate beer. Cost of pumping much lower than with gas. Adaptable stationary or portable bars—1/6 or ¼ H. P. sizes. Attractively priced. Details on request.

Refrigeration Units

Design and precision tooling combine to make these units extraordinary from the standpoint of efficiency, and amply able to withstand the exacting requirements of long continued intermittent service. ¼ to 5 H. P. sizes—air and water cooled. Details on request.

CURTIS Pneumatic Machinery Co. 1934 Kienlen Avenue, Saint Louis 5518-Y Hudson Terminal, New York City

Beer Dispensing Equipment *for* **26 Years!**

Bar Faucets, Tapping Rods, Beer Dispensing Equipment and Fittings; Coils, Air and Gas Regulators and pumps,

ILLINOIS BRASS MFG. CO.
224 NORTH ADA STREET CHICAGO, ILL.

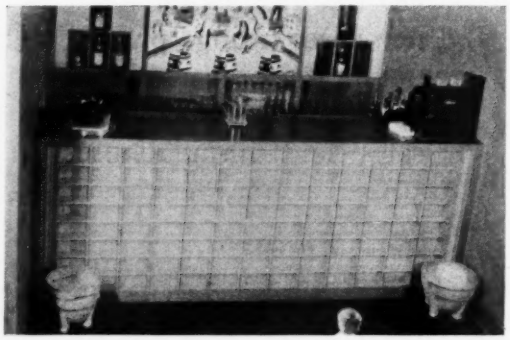
KLEEN-AIR
BEER PUMPS

Quiet, efficient and producing clean air UNI-FLOW beer pumps are made in every size necessary to care for the largest or smallest establishments. New, low net price basis.

UNIFLOW MANUFACTURING CO. Dept. D, Erie, Pa.

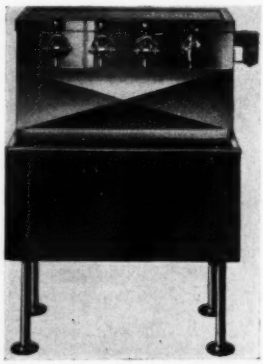
Makers of Fine Precision Equipment Since 1921
WATER SYSTEMS—WATER SOFTENERS—WATER FILTERS—BEER PUMPS
BEVERAGE COOLERS—ELECTRIC REFRIGERATORS—CELLAR DRAINERS

interior colored surfaces of the hollow glass blocks." Blocks may be had in many colors and are manufactured by Owens-Illinois Glass Company, Toledo, Ohio.



Metal Beer Cooler

Pictured is metal beer cooler offering controlled beer temperatures. Makers call attention to new radial dual controlled feature of the cooler which dispenses beer with

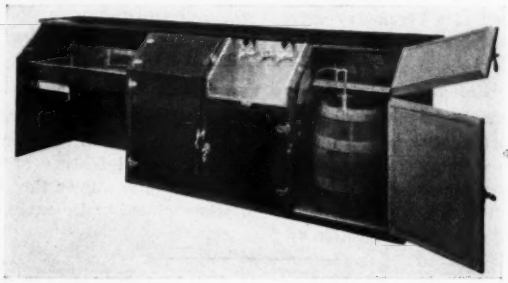


temperature regulated to correspond to the weather. The cooling feature consists of coils in two separate tanks or cylinders. Transfer of heat is accomplished by glycerine and water which circulate between the two cylinders, offering a reserve sufficient to cool a large quantity of beer without starting the machine. Temperatures may be set from 33 to 44 deg. F. Made by M. Leitner & Co., 2324 Ogden Ave., Chicago.

Service Bar Ready for Use

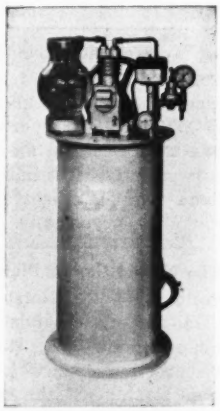
Shown is a service bar, stock design of which is made of fir plywood on ends and front. If desired, it can be supplied with African mahogany panel and solid mahogany top. Box will hold three half-barrels. Center compartment can also be used as a temporary storage space. The box comes fully equipped, says the maker, with gas gauge and all necessary connections so that the receiver of the box "merely has to hook on to his gas tank, put

ice in the box, and it is ready for operation." Holds 150 lbs. of ice. It can be, says the maker, also used either under a bar or set out as a counter display in itself. Wash rack is at the side. The manufacturer: The Wolflin Co., Evansville, Ind.



Beer Pump Filters Air

Pictured is an electric beer pump which, makers say, eliminates all foreign odors by washing and filtering the air for drawing beer. Pump will handle from one to



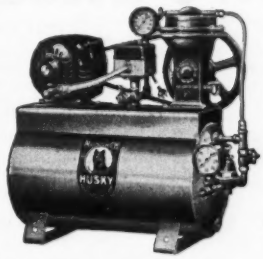
twelve taps. All metal construction. 36 in. high. Can be placed at end of the back bar. "Ornamental and compact," says the manufacturers, who also point out a quarter of a century of experience with the pump. Made by Badger Electric Beer Pump Co., 1226 No. 29th St., Milwaukee, Wis.

A Beer Cooler—Portable

A unit is announced which its makers call a "baby bar," because of the drain which is fitted to the barrel when it is tapped. The cooler has a capacity of four 8 oz. glasses per minute. Available in oak with chromium trim, or Chinese red, or white and black with chromium trim. Special fittings for Golden Gate or New York tapping systems furnished on request. If not otherwise specified, a Peerless tap is furnished. The makers say the unit is priced for volume. Made by American Tap Bush Company, 6402 East Jefferson Ave., Detroit, Mich.

PUMPS PURE AIR ONLY

Built for Low Pressure and High Pressure Systems



No oil fumes to reach the beer. Bronze bearings throughout. Force feed lubrication. Quiet in operation. Completely assembled ready to install. Fully guaranteed. A ready seller.

Write for distributors proposition.

THE MONARCH ENGINEERING CO
Dayton, Ohio

Positively Pumps No Oil!

Dayton's "WHITE CAP"

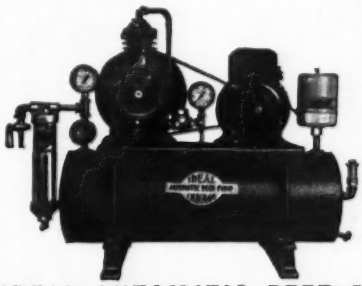
Automatic, Oil-less BEER PUMP

EXCLUSIVELY FOR BEER!

Ideal for dispensing draught beer in large volume because it assures a good supply of clean, dry compressed air at all times. No pistons or rings—prevents pumping of any oil whatsoever into air line. ¼ HP repulsion-induction motor—10 gal. tank—cuts out at 30 lbs. pressure and in at 20 lbs.—quiet operation—V-belt driven. Size 24"x25"x12". Weight—80 lbs. net. Ask about Model Y-100—Also Air Compressors from 1 to 50 cfm.

The DAYTON AIR COMPRESSOR CO.
"49 Years of Specializing"
425 Valley St., Dayton, Ohio

IDEAL *Automatic Electric* **BEER PUMP**
WITH AIR FILTER



A QUIET and complete automatic unit for supplying air pressure for the dispensing of draught beer. The cost of operating this unit is less than one cent a barrel. Especially priced at $67.00, complete. Without filter $62.50.

Write for exclusive dealer proposition

IDEAL AUTOMATIC BEER PUMP COMPANY
801 WEST WASHINGTON BOULEVARD, CHICAGO
Telephone Haymarket 5680

BANISH FAUCET TROUBLES

THE best insurance against noisy or leaky faucets you can offer your customers. . . . that briefly describes "ACME" Bibb Washers. Made of extremely tough, black rubber compound, "ACMES" are resistant to either hot or cold water. Eliminate rapping or chattering . . . allow full waterway . . . seat perfectly. Seven sizes. Each washer branded "ACME" for your protection.

Your Jobber Carries "ACMES"

LAVELLE RUBBER COMPANY
320 W. Illinois St., Chicago

Look for the Arm-and-Hammer

ARMSTRONG BROS.

Drop Forged Pipe Wrenches

The patented Pipe Wrench has 10 improved features including: Heavy forged-in lugs to take side strain. Ball-and-Socket action. No "frame." Improved spring. Replaceable Tool Steel Jaws —STRENGTH with balance.

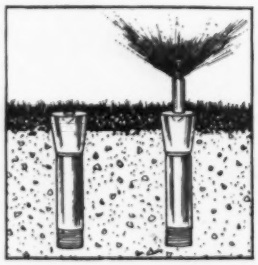
ARMSTRONG BROS. Chain Tongs are drop forged from special steels; chains are proof tested.

These finer wrenches cost no more.

Write for Catalog

ARMSTRONG BROS. TOOL CO.
"The Tool Holder People"
323 N. Francisco Ave., CHICAGO, U. S. A.

Master Plumbers



. . . everywhere appreciate the new avenues of business and profit that the "NIAGARA" underground lawn irrigation unit has opened. "NIAGARA" heads cost less to install and operate —with 45 lbs. pressure 14 heads operate on a regular house service line using no more water than the ordinary garden hose—write at once for further information.

THE NIAGARA IRRIGATION CO., OLMSTED FALLS, OHIO

THE "MODERN" RANGE BOILER

Pat. No. 1853949

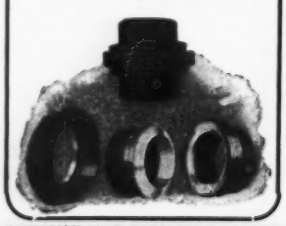
30, 40 and 50 Gallons
200, 250 and 300 lb. Test

In the above capacities the top and body of the "Modern" Boiler is formed from a single extra-heavy Copper Shell and drawn cold-seamless to the bottom, thus eliminating the top joint and the side seam and leaving only a bottom joint. The bottom head is hydraulically pressed on the shell and riveted securely with Copper Rivets closely spaced. Over the rivets a seamless copper band is spun and sweated, reinforcing the joint and making a solid construction which is impossible to come apart under any circumstance. Every boiler is reinforced internally and guaranteed against collapse. The interior is thoroughly tinned.

Sold Through Wholesalers Only

HAYES MFG. CO., Paterson, N. J.
Established 1870

EXAMINE THE DART CLOSELY!



...YOU'LL discover just why thousands standardize on DART Unions. As a positive insurance against leaks two bronze to bronze seats, accurately machined and carefully ground, are provided. For strength pipe ends and nut are made of heavy air refined malleable iron.

E. M. DART MFG. CO. *Providence, R. I.*
The Fairbanks Co., Sales Agents
Canadian Factory:
Dart Union Co., Ltd., Toronto, Can.

New Trade Literature

Issues Cut-out of Iron Body Gate Valve.

Jenkins Bros. of New York City have just issued an unusual piece of valve literature, a 12-in. cut-out replica of their standard iron body gate valve. This cut-out provides an exact reproduction of both the exterior and the mechanism of a big heavy valve. An accurate listing of the features of design and construction of this valve is also given.

Bulletin Announces New Furnace and Boiler Cleaner

The Breuer Electric Mfg. Co. of Chicago has just issued a bulletin announcing a new furnace and boiler cleaner, a heavy duty unit of great power. A special feature of this new machine is the observation glass which allows the operator to see dirt being removed when cleaning in out-of-the-way corners of a boiler or furnace.

Issues Attractive Wall Hanger

Ruud Mfg. Company of Pittsburgh, Pa., has just issued an attractive wall hanger entitled "Be ready for the Sunrise." This piece of literature illustrates and describes in detail this company's automatic storage water heaters, which are made in three sizes, 20, 30 and 45 gallons, suitable for most homes and many commercial requirements. They are made with galvanized tanks, copper alloy tanks, galvanized tanks with hard water hand-holes, or copper alloy tanks with hard water hand-holes. The size of the hanger is 24½ x 18 in., and it is printed in several colors.

Testing Welders and Their Welds

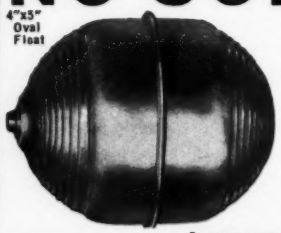
The Linde Air Products Company of New York City has just issued a 24-page illustrated booklet entitled "Testing and Qualification of Welders." The purpose of this booklet is to outline simple tests for measuring the ability of welders, the first of the six essential steps in every procedure control for oxy-acetylene welding. Separate sections of the book discuss in detail the various tests.

"The Why of Copper Plumbing"

Ross Martin, president of the Northern Indiana Brass Company, Elkhart, Ind., has just published a 28-page bulletin "The Why of Copper Plumbing." This is a presentation of facts concerning copper plumbing which should enable the plumber to determine for himself the real value of copper plumbing and also enable him to present the case for copper plumbing accurately and effectively to his prospective customers. The bulletin is divided into 6 chapters as follows: 1, General Considerations. 2, Cold Water Pipes and Underground Services. 3, Hot Water Pipes. 4, Heating Systems. 5, Waste and Vent Systems. 6, Concerning Fittings.

NO-SOL COPPER FLOATS

4"x5" Oval Float



QUALITY MERCHANDISE *does most to stimulate* CONSUMER CONFIDENCE

Incorporated 1907

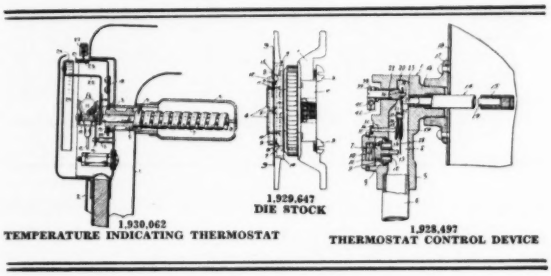
THE AYLING & REICHERT CO.
3047 NORTH ERIE STREET TOLEDO, OHIO

NEW IDEAS FROM PATENT OFFICE

Heating Department

1,930,062. Temperature Indicating Thermostat. Edwin A. Rutenber, Milwaukee, Wis., assignor to A. J. Lindemann & Hoverson Company, Milwaukee, Wis., a corporation of Wissonsin.

1,929,647. Die Stock. Thorvald Peterson, Erie, Pa., assignor to Reed Manufacturing Company, Erie, Pa., a corporation of Pennsylvania.

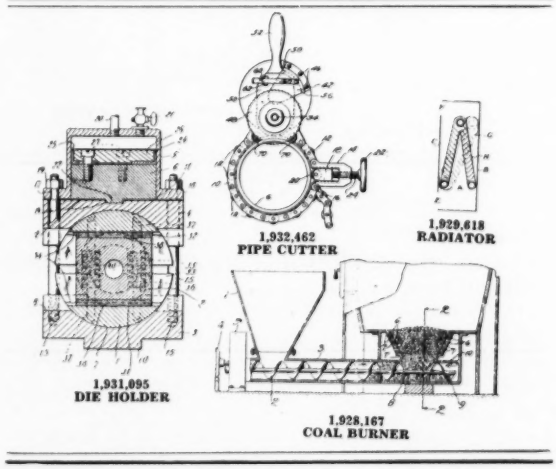


1,928,497. Thermostat Control Device. Edwin Whitfield McKinley, Compton, Calif., assignor, by mesne assignment, to Southern Water Heater Corporation, Compton, Calif., a corporation of California.

1,931,095. Die Holder. Harold N. Todt, Detroit, Mich., assignor to Revere Copper and Brass Incorporated, a corporation of Maryland.

1,932,462. Pipe Cutter. Raymond W. Howlett, Kansas City, Mo.

1,929,618. Radiator. Robert S. Wentworth, Johnstown, Pa., assignor to National Radiator Corporation, Johnstown, Pa., a corporation of Delaware.



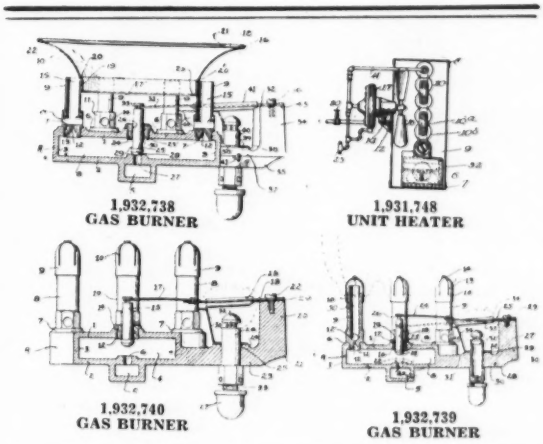
1,928,167. Coal Burner. Robert E. Bressler, Oregon, Ill.

1,932,738. Gas Burner. Harry E. Kerr, Cleveland, Ohio, assignor to the Barber Gas Burner Company, Cleveland, Ohio.

1,931,748. Unit Heater. Paul W. Bielfeldt, Mount Vernon, Ill.

1,932,740. Gas Burner. Harry E. Kerr, Cleveland, Ohio, assignor to the Barber Gas Burner Company, Cleveland, Ohio.

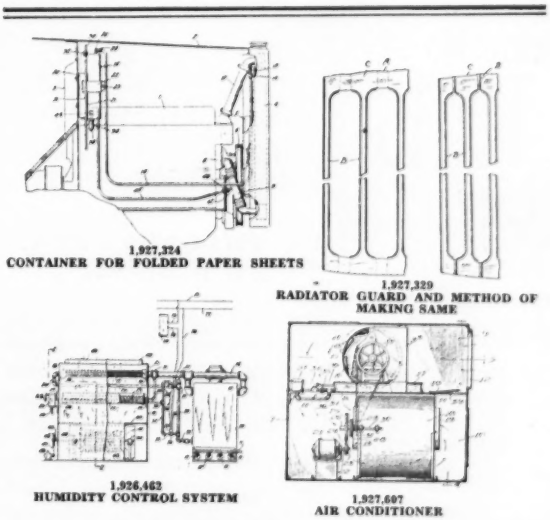
1,932,739. Gas Burner. Harry E. Kerr, Cleveland, Ohio, assignor to the Barber Gas Burner Company, Cleveland, Ohio.



1,926,462. Humidity Control System. Willet E. Stark, East Cleveland, Ohio, assignor, by mesne agreements, to The Bryant Heater Company, Cleveland, Ohio, a corporation of Ohio.

1,927,324. Container for Folded Paper Sheets. W. B. Powell, assignor to Appleford Paper Products, Ltd., Hamilton, Ontario, Canada.

1,927,329. Radiator Guard and Method of Making Same. George E. Whitlock, Toledo, Ohio, assignor to the City Auto Stamping Company, Toledo, Ohio, a corporation of Ohio.

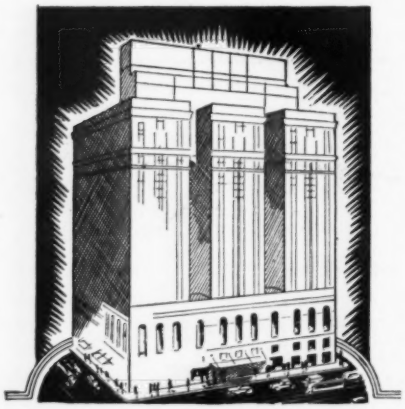


1,927,317. Overflow Tank for Radiators. Herbert W. Lloyd and John Ralph Homes, Lockport, N. Y., assignors to Harrison Radiator Corporation, Lockport, N. Y., a corporation of New York.

1,927,607. Air Conditioner. Fred Hands, Oak Park, Ill.

RENDEZVOUS

of **PITTSBURGH'S SMART SET**



Two famous restaurants, a tap room, a cafeteria, a roof garden decorated by the late Joseph Urban, the Continental Bar, the Halter and Hurdle Room, and famous dance orchestras provide a variety of opportunities for food, drink and entertainment at a wide range of prices. Rooms are cozy and elegantly furnished, rates reasonable. Centrally located, a few steps from anywhere.

HOTEL WILLIAM PENN

PITTSBURGH, PA.

1600 ROOMS • 1600 BATHS

IN PHILADELPHIA

In the Heart of Things

Here one may live graciously, yet inexpensively . . . where modern luxuries combine with friendly hospitality to assure an enjoyable visit.

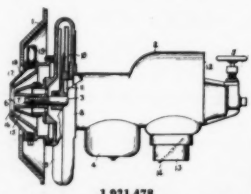
You may properly expect precise, thoughtful service . . . and a cuisine that is one of the enduring traditions of this world-famous hotel.

Claude H. Bennett
General Manager

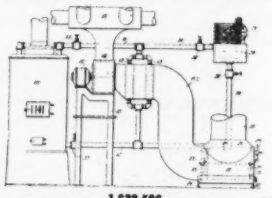
BELLEVUE STRATFORD

1,931,478. Combined Gas and Oil Burner. Harry Barley, San Francisco, Calif.

1,932,586. Combined Heating and Cooling System. Frederick Hellmann, Chattanooga, Tenn., assignor of one-third to Walter S. Adams, Jr., Chattanooga, Tenn.



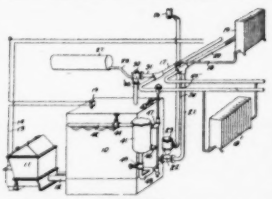
1,931,478
COMBINED GAS AND OIL BURNER



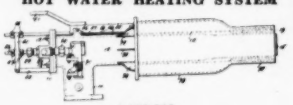
1,932,586
COMBINED HEATING AND COOLING SYSTEM

1,930,812. Oil Burner. Hannibal A. Kunitz, Stratford, Conn,. assignor to Gilbert & Barker Manufacturing Company, West Springfield, Mass., a corporation of Massachusetts.

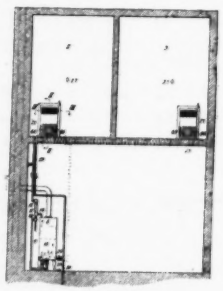
1,930,842. Method of Heating. Arthur E. Paige, Philadelphia, Pa., assignor to John Wood Manufacturing Company, Conshohocken, Pa., a corporation of Pennsylvania.



1,931,419
HOT WATER HEATING SYSTEM



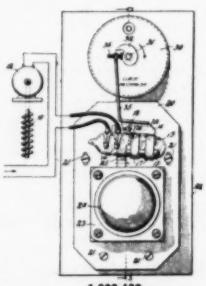
1,930,812
OIL BURNER



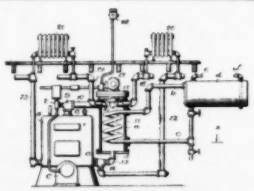
1,930,842
METHOD OF HEATING

1,931,419. Hot Water Heating System. Homer A. Thrush, Peru, Ind.

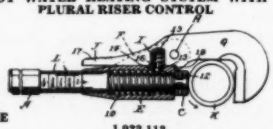
1,932,422. Control for Heating and Like Systems. Oliver F. Rhodes, Peru, Indiana.



1,932,422
CONTROL FOR HEATING AND LIKE SYSTEMS



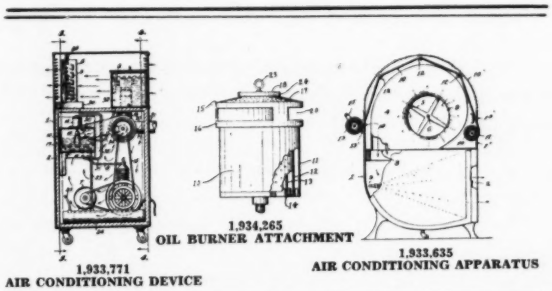
1,932,069
HOT WATER HEATING SYSTEM WITH PLURAL RISER CONTROL



1,932,113
PIPE WRENCH

1,932,069. Hot Water Heating System with Plural Riser Control. John Edward Ercanbrack and Forrest A. Johnson, Chicago, Ill.; said Johnson assignor to Bell & Gossett Company, Chicago, Ill., a corporation of Illinois.

1,932,113. Pipe Wrench. John R. Long, Los Angeles, Calif.



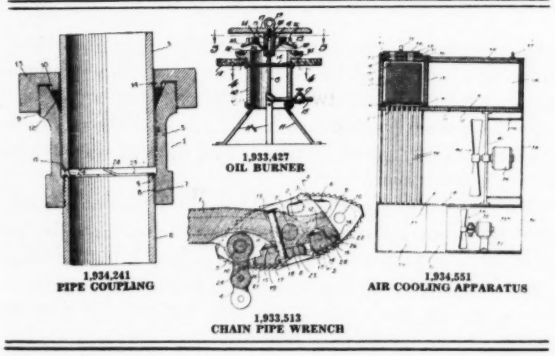
1,933,771. Air Conditioning Device. John P. Strang and Emile P. Brus, Kansas City, Mo.

1,933,635. Air Conditioning Apparatus. Frank L. Meyer, Peoria, Ill.

1,934,265. Oil Burner Attachment. W. M. Hermann, Northampton, Mass.

1,934,241. Pipe Coupling. Percival H. Seward, Brooklyn, N. Y., assignor to American Radiator Company, New York, N. Y., a corporation of New Jersey.

1,934,551. Air Cooling Apparatus. Frederick W. Meysenburg, Oak Park, Ill.



1,933,427. Oil Burner. Royce Gottholt, Marfa, Tex.

1,933,513. Chain Pipe Wrench. Willard S. Stuart, East Hartford, Conn., assignor to The Billings & Spencer Company, a corporation of Connecticut.

Plumbing and Heating Course Transferred at Carnegie Institute

The four-year course in plumbing, heating and ventilating that has been given for a number of years by the College of Industries at the Carnegie Institute of Technology at Pittsburgh, Pa., has recently been transferred to the College of Engineering where it has become an option in the department of mechanical engineering.

The subjects included in the curriculum of the plumbing, heating and ventilating course have been selected to give the student a well-rounded education which will fit him for any of the several branches of the industry.

An Outstanding Fitting

1. Air Tested Under Water.
2. Made of Red Brass.
3. Quality Workmanship.

Send for Catalog

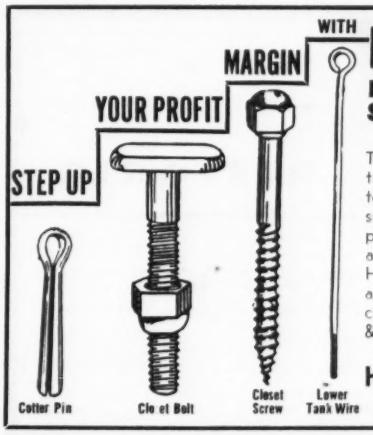
ACHESON MFG. COMPANY
Factory and Office: Rankin, Pa.
Warehouse—197 Lafayette St.,
New York, N. Y.

ACHESON FITTINGS

BARRETT
PLUMBER'S *Rough* BRASS *Goods*

The Standard — *Compression Stops* / *Compression Stops and Wastes* / *Ground Key Line* / *Waterworks Brass Goods* — *of Comparison*

THE CLEVELAND BRASS MANUFACTURING COMPANY
4606-4700 HAMILTON AVENUE CLEVELAND, OHIO



HINDLEY'S
PLUMBERS' SPECIALTIES

These specialties are truly called "little aids to big profits." To assure a wider margin of profit on every job keep a complete supply of HINDLEY'S on hand at all times. Complete line cataloged in Plumbing & Heating Catalog.

HINDLEY MFG. CO.
VALLEY FALLS, R. I.

• WARNOCK •
Triple Wear Wrenches

The Warnock wrench is easy to adjust. The strap is arranged in such a way that it can be drawn absolutely tight in *one* movement. Notice, too, that this strap is triple folded at the point of greatest strain.

For chrome, brass and nickel plated pipe

WARNOCK MFG. CO., Worcester, Mass.

MORE MODERN THAN EVER
HOTEL
PLANKINTON
RADIO
IN YOUR ROOM
WITHOUT CHARGE
Completing our $200,000 Modernization Program
ALL ROOMS
WITH BATH AND RADIO $2.50 UP
Breakfast.....25¢
Lunch.....35¢
Dinner...65¢ and up
AGAIN THE FINEST HOTEL IN
NOW UNDER NEW MANAGEMENT
MILWAUKEE

★ ★ ★
HISTORIC

The Willard is two blocks from the White House, across the street from N. R. A., near theatre and shopping districts.

President Grant's strolls "up the Avenue" to the old Willard are memorable . . . Leaders of today's affairs find themselves again the center of National events at the new Willard — modern in appointments — old in tradition.

Single Rooms with Bath $4 up
Double Rooms with Bath $6 up

Dine in the famous "Crystal Room" Popular Price Coffee Shop

The WILLARD HOTEL
"Residence of Presidents"
WASHINGTON, D. C.
H. P. Somerville, Managing Director

Government—

(Continued from Page 31)

case. One of these records 0 to 25 per cent of flow over the whole width of chart and the other above 25 per cent to 100 per cent. Seven-day charts are used througout and spring-driven clocks with eight day movements are used.

Two outfits for indicating steam pressure at remote points also were included the indicating instruments being located in the steam plant.

Upon completion, all of the work inclusive of structural material was given two coats of heat and corrosion resisting paint.

The entire system of piping, inclusive of bodies of fittings, flanges, valves, expansion joints, etc., was insulated and protected by a 50-lb. asbestos roofing jacket.

All mains 5 in. and larger for 300-lb. pressure work received two 1½-in. thick telescopic layers of insulation. The insulation on smaller sizes consisted of two 1-in. thick layers. No. 10 gauge copper wire ties on 6 in. centers were used in connection with the larger sizes and copper wire ties of No. 12 gauge with the smaller sizes for holding the insulation in place. On curved surfaces as in expansion loops, the roofing jacket was replaced by ¼-in. thickness of a special insulation applied over wire mesh.

Relief

(Continued from Page 34)

plosion occurred, one man was fatally injured, and another was injured so badly that for a time his condition was critical. One of two small girls playing in the back yard, as shown in the sketch, Fig. 2, was struck in the head by a 15-lb. piece of iron. She died at the hospital within a few hours.

Municipal authorities attributed the accident to stoppage of pipes by corrosion and sediment. In the absence of a safety valve this blocking of the circulation could have permitted overpressure that could not be relieved by the backing out of hot water into the city mains.

Another accident to a water heater occurred on November 4, at a garage in Denver, Colorado. In this case the heater was being used to furnish hot water for washing cars, and was so installed that there was no means for relieving overpressure. There was no relief valve, and a check valve in the feed line effectively prevented the relief that might have been obtained through direct communication with the city water main.

This accident occurred during the noon hour when no water was being drawn from the system. All indications pointed to overpressure as the cause. The exploding heater injured a garage workman seriously and wrecked the interior of the room in which it was located, shattering itself into pieces no larger than a man's hand.

In Philadelphia, on the night of November 14, a two year old child was killed by the explosion of a small water heater. Three other persons were so injured that hospital treatment was given them.

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8 cents for each word including heading and address. Count seven words for keyed address. Minimum $2.00 for each insertion.

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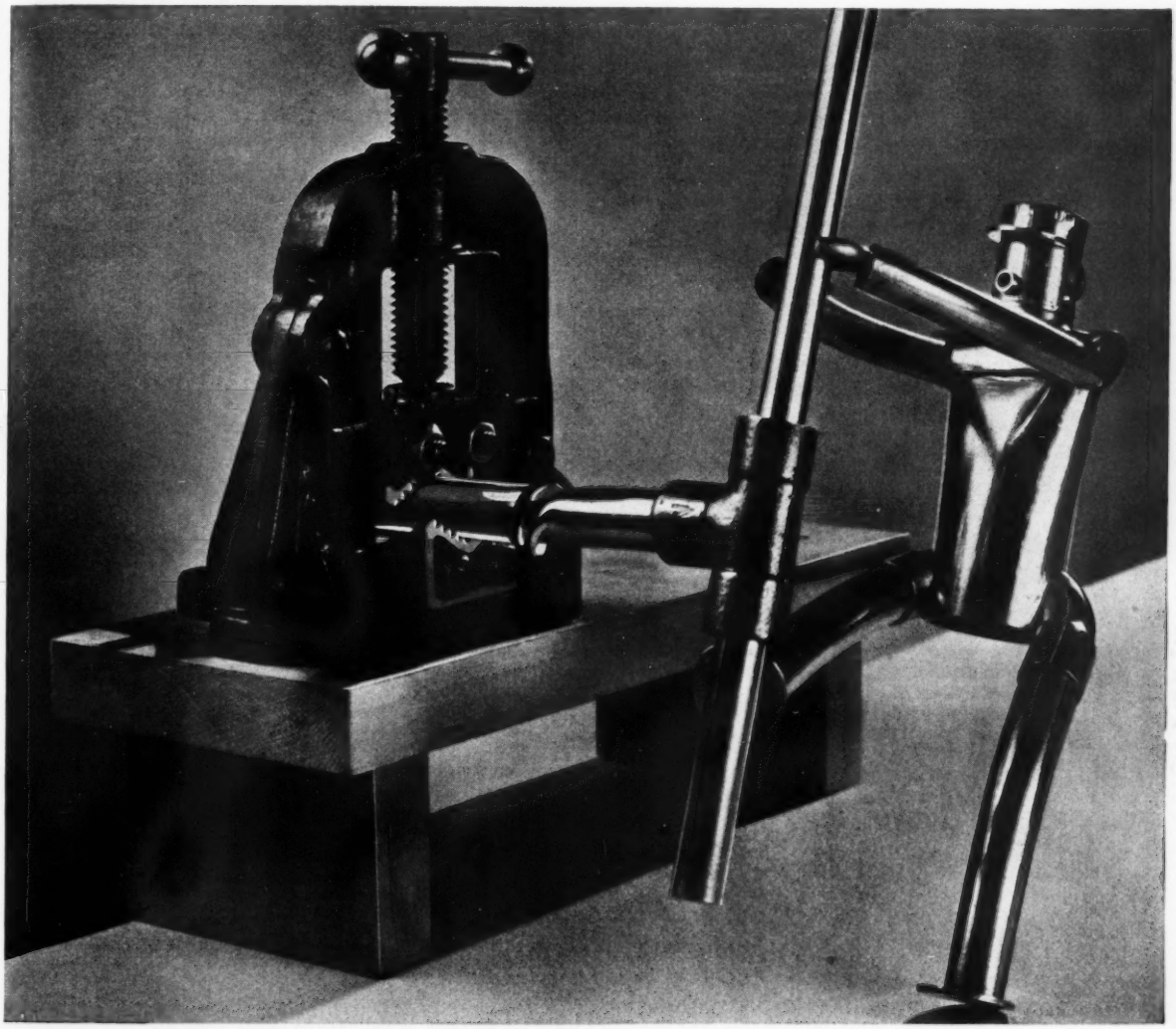

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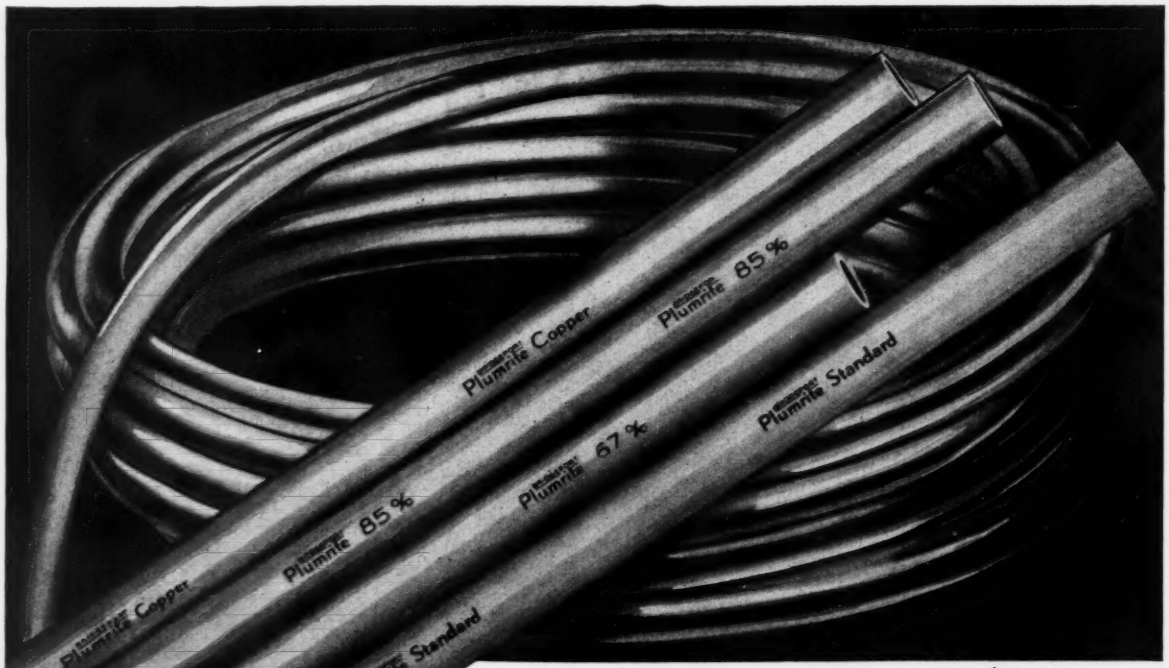

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